NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Wilmington Regional Office
County: Columbus
NC Facility ID: 2400125
Inspector's Name: Russell Morgan III
Date of Last Inspection: 05/31/2017
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): West Fraser, Inc. - Armour Lumber Mill

Facility Address:
West Fraser, Inc. - Armour Lumber Mill
361 Federal Road
Riegelwood, NC 28456

SIC: 2421 / Sawmills & Planing Mills General
NAICS: 321113 / Sawmills

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0504, 02D .0512, 02D .0515, 02D .0516, 02D .0512, 02D .0530, 02D .0530(u), 02D .0614, 02D .1109, 02D .1111, 02D .1806
NSPS: N/A
NESHAP: MACT DDDD, ZZZZ, and DDDDD
PSD: Yes
PSD Avoidance: N/A
NC Toxics: N/A
112(r): N/A
Other: Title V renewal

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Michelle Potter Environmental Coordinator (910) 655-4106 361 Federal Road Riegelwood, NC 28456	Russell Schwartz General Manager (910) 655-4106 361 Federal Road Riegelwood, NC 28456	Michelle Potter Environmental Coordinator (910) 655-4106 361 Federal Road Riegelwood, NC 28456

Application Data

Application Number: 2400125.16A, 2400125.16B, 2400125.18A
Date Received: 01/28/2016, 09/19/2016, 02/23/2018
Application Type: Renewal/Modification
Application Schedule: Renewal

Existing Permit Data
Existing Permit Number: 02248/T29
Existing Permit Issue Date: 10/09/2017
Existing Permit Expiration Date: 09/30/2022

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2016	10.42	92.00	379.72	255.91	95.29	30.80	19.92 [Methanol (methyl alcohol)]
2015	9.40	83.02	394.12	226.20	92.23	29.46	20.22 [Methanol (methyl alcohol)]
2014	8.90	78.37	412.49	213.51	77.06	42.66	19.98 [Methanol (methyl alcohol)]
2013	9.80	86.01	389.06	234.50	77.90	42.52	18.93 [Methanol (methyl alcohol)]
2012	9.18	80.76	328.25	220.26	60.15	37.39	15.97 [Methanol (methyl alcohol)]

Review Engineer: Betty Gatano

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 02248/T30
Permit Issue Date:
Permit Expiration Date:

1. Purpose of Application

West Fraser, Inc. - Armour Lumber Mill (West Fraser) currently holds Title V Permit No. 02248T29 with an expiration date of September 30, 2022 for a sawmill in Riegelwood, Columbus County, North Carolina. West Fraser submitted the following permit applications during 2016 and 2018, and these have been consolidated under the renewal permit application:

- Permit Application No. 2400125.16A – The renewal application was received on January 28, 2016, or at least nine months prior to the expiration date of October 31, 2016, as required by General Permit Condition 3.K. Therefore, the permit at that time (Air Permit No. 02248T27) shall not expire until the renewal permit has been issued or denied.

- Permit Application No. 2400125.16B – Application received on September 19, 2016. This permit application is a significant permit modification under 15A NCAC 02Q .0501(c)(1) to change testing requirements. Because the testing requirements are being made less stringent (i.e., the testing frequency is being decreased), this permit modification is appropriately classified as a significant modification and must be sent to public notice.

- Permit Application No. 2400125.18A – This application is a "Part 2" significant modification under 15A NCAC 02Q .0501(c)(2) and was received on February 23, 2018. Under the "Part 1" significant modification, West Fraser added a new cyclone (ID No. CD-D1-1) and new planer hog shavings truck bin (ID No. IF-SB-2) to Air Permit No. 02248T29.

2. Facility Description

West Fraser operates a sawmill in Riegelwood, NC. The primary product manufactured at the facility is southern yellow pine lumber. Other products include wood chips, sawdust, bark, and shavings. Pine logs are trucked in, debarked, and cut into appropriate dimensions in the sawmill. The green lumber is then dried in two continuous drying lumber kilns and one batch kiln, which are used to reduce the moisture content in the lumber from approximately 50 to 15 percent. Steam for the kilns is provided by a wood-fired boiler. The dried lumber is planed and trim in the planer mill. The finished lumber is then sorted by length, size, and grade and transported by truck or rail for delivery to the customer. West Fraser is permitted to produce up to 294,830 thousand board feet (MBF) of dimensional lumber each year, while the mill typically produces 180,000 to 200,000 MBF/yr.

The sawmill currently operates two shifts, Monday through Thursday. The kiln and boiler areas typically operate 24 hours per day and 7 days per week to avoid unnecessary start-ups and shut-downs. The planer mill operates two shifts, five days per week.

3. History/Background/Application Chronology

<u>Permit History since Previous Permit Renewal</u>

November 21, 2011	TV permit renewal issued. Air Permit No. 02248T24 was issued on November 21, 2011 with a permit expiration date of October 31, 2016.

October 3, 2012	Air Permit No. 02248T25 was issued. This permit was processed as a Prevention of Significant Deterioration (PSD) modification to construct two continuous steam-heated, dual path lumber drying kilns (ID Nos. ES-CDPK1 and ES-CDPK2), each with a production capacity of 137,415 MBF. This project was referred to as the continuous duel path (CDP) kiln project. With the addition of the continuous kilns, the facility intended to discontinue the use the existing lumber dry kilns (ID Nos. ES-K1-1, ES-K1-2, ES-K1-3, and ES-K1-4). The batch kilns were allowed to operate until the two continuous kilns were fully operational.
December 18, 2013	Air Permit No. 02248T26 was issued. The permit was processed as a one-step significant modification under 15A NCAC 02Q .0501(d)(1) to reinstate an existing steam-heated, low temperature lumber kiln (ID No. ES-K1-4) to air quality permit. The kiln was described with production limit of 20,000 MBF per year, which is less than maximum capacity. NC air toxic limits for MACT-affected sources were also removed under this permit modification.
November 10, 2014	Air Permit No. 02248T27 was issued. The permit was processed as a one-step significant modification under 15A NCAC 02Q .0501(d)(1) to modify the carbon monoxide (CO) emission limits under the Case-by-Case MACT requirements for the wood-fired boiler (ID No. ES-BW-1). West Fraser determined the boiler (ID No. ES-BW-1) was properly characterized as a hybrid suspension grate (HSG) boiler, with a larger associated CO emission limit.
February 18, 2016	Air Permit No. 02248T28 was issued. This permit was processed as minor modification under 15A NCAC 02Q .0515 to add a diesel-fired emergency fire water pump (183 brake horsepower (bhp), ID No. IES-FP-2).
February 18, 2016	Air Permit No. 02248T29 was issued. This permit was processed as "Part 1" of a two-step significant modification under 15A NCAC 02Q .0501(c)(2) to add a wood residuals planer hog (ID No. ES-WW3) with associated cyclone (ID No. CD-D1-1). The permit expiration date was changed to September 30, 2022 with the issuance of Air Permit No. 02248T29 because the renewed permit had not yet been issued. An associated footnote was added to the permit stating, "This permit shall expire on the earlier of September 30, 2022 or the renewal of Permit No. 02248T27 has been issued or denied."

Application Chronology

January 28, 2016	Received Permit Application No. 2400125.16A for permit renewal. This permit application was originally assigned to David Hughes.
January 29, 2016	Sent acknowledgment letter indicating the application for permit renewal was complete.
September 19, 2016	Received Permit Application No. 2400125.16B for a one-step significant modification to modify testing requirements. This permit application was originally assigned to Rahul Thaker.

September 19, 2016	Sent acknowledgment letter indicating the application for significant modification was complete.
August 22, 2017	Permit Application Nos. 2400125.16A and 2400125.16B were reassigned to Judy Lee.
October 4, 2017	Michelle Potter, EHS Supervisor at West Fraser, e-mailed David Hughes and indicated the facility wanted to conduct air curtain burning at the facility to remove a debris pile. West Fraser had conducted air curtain burning in the past, and emissions from this activity were included in previous emission inventories. David Hughes forwarded the e-mail to Judy Lee on October 5, 2017.
October and November 2017	Throughout the months of October and November 2017, Judy Lee discussed the possibility of permitting an air curtain burner (ACB) at West Fraser with Michelle Potter.
October 30, 2017	Judy Lee "stopped the clock" on Permit Application No. 2400125.16B because she was waiting on information from Michelle Potter regarding an applicability determination for the ACB.
February 23, 2018	Received Permit Application No. 2400125.18A for the "Part 2" application of a two-step significant modification. This permit application was originally assigned to Judy Lee.
March 12, 2018	Sent acknowledgment letter indicating the application for significant modification was incomplete because the permit application fee was not included.
March 14, 2018	The check for Permit Application No. 2400125.18A was found in the Wilmington Regional Office (WiRO). The permit application was deemed complete.
April 11, 2018	The three in-house permit applications for West Fraser were reassigned to Betty Gatano.
April 17, 2018	Betty Gatano discussed the outstanding applicability determination for the ACB with Michelle Potter. Ms. Potter clarified the addition of the ACB was never intended to be added to Permit Application No. 2400125.16B. West Fraser is working with a consultant to determine if they want to permit an ACB. (Permitting is more difficult because the ACB is now considered a CISWI and permitting requires air modeling.) Should they decide to add an ACB, they will do so under a separate permit application.
April 30, 2018	Betty Gatano contacted Michelle Potter regarding permitting of the emergency engines (ID Nos. IES-FP-1 and IES-EG-1). These engines have emission below significant levels. Ms. Potter requested these engines be moved to the insignificant activities list.

May 14, 2018	Forwarded draft permit and review to Mark Cuilla, Permitting Supervisor, for comments.
May 21, 2018	Comments received from Mark Cuilla.
Mary 22, 2018	Drafts forwarded to facility for comments.
May 30, 2018	Samir Parekh of the Stationary Source Compliance Branch indicated he had no comments on the draft documents.
June 1, 2018	Michelle Potter requested to modify the description of the steam-heated, low temperature lumber kiln (ID No. ES-K1-4). When this kiln was reinstated on the permit under Air Permit 02248T26 issued on December 18, 2013, a production limit of 20,000 MBF per year was added to the source description. Ms. Potter requested to use the kiln's maximum capacity of 32,900 MBF as the throughput for this kiln. The permit review for Air Permit 02248T26 discusses the rationale for adding the production limit of 20,000 MBF to the description for this kiln. The permit review also states, "If West Fraser were to operate Kiln #4 at its maximum drying potential, they would remain below all of the throughput and production rates used for the PSD review for the new [continuous dual kilns.]"[1] Therefore, the DAQ concurs with West Fraser's request and the maximum capacity of kiln ES-K1-4 will be added to the permit under this permit renewal/modification.
June 18, 2018	Michelle Porter requested to add a sawdust bin on the insignificant activities list. This emission source is existing but has not yet been added to the permit. The bin is fully enclosed and not equipped with any vents. Emissions only occur during truck loading and are assumed to negligible. Ms. Porter submitted the D4 form for the sawdust bin on June 22, 2018.
June 27, 2018	Draft permit and permit renewal forwarded to public notice.

[1] Jenny Kelvington (12/18/2013).

4. Permit Modifications/Changes and TVEE Discussion

The following table describes the changes to the current permit as part of the renewal/modification process.

Pages	Section	Description of Changes
Throughout permit and cover letter	-	Updated all dates and permit revision numbers.
Insignificant activities list	--	• Moved the diesel-fired emergency water pump (ID No. IES-FP-1) and diesel-fired emergency generator (ID No. ES-IEG-1) to the insignificant activities list. These engines meet the definition of insignificant activities under 15A NCAC 02Q .0503(8). • Added a sawdust bin to the insignificant activities list (ID No. IF-SB-3). This is an existing source.
Cover page	--	Removed footnote stating, "This permit shall expire on the earlier of September 30, 2022 or the renewal of Permit No. 02248T27 has been issued or denied."
3	Section 1.0 – Equipment List	• Changed the description of the woodwaste collection system (ID No. ES-WW1) to the "Planer Machine." • Changed the description of the woodwaste collection system (ID No. ES-WW2) to the "Planer Trim Saw and Hog." • Added cyclone (ID No. CD-D1-1) as control to the Planer Trim Saw and Hog (ID No. ES-WW2). The emission source can use either cyclone (ID Nos. CD-C1-1 or CD-D1-1) but cannot operate both cyclones simultaneously. • Removed wood residuals hogged planer (ID No. ES-WW3). This emission source is more appropriately considered as part of planer trim saw and hog operations (ID No. ES-WW2). • Modified the description of the continuous steam-heated, dual path lumber drying kilns (ID Nos. ES-CDPK1 and ES-CDPK2) to be consistent throughout the permit. • Modified the throughput of the steam-heated, low temperature lumber drying kiln (ID No. ES-K1-4). • Removed "MBF" and expressed the throughput of the kilns numerically. • Moved the diesel-fired emergency water pump (ID No. IES-FP-1) and diesel-fired emergency generator (ID No. IES-EG-1) to the insignificant activities list. • Added MACT Subpart DDDDD label to the hybrid suspension grate wood-fired boiler (ID No. ES-BW-1). • Added footnote stating the Permittee shall comply with the CAA §112(j) standard until May 19, 2019. • Added footnote stating the Permittee shall comply with MACT Subpart DDDDD beginning May 20, 2019. • Removed footnote stating the emission source (ID No. ES-WW3) and associated cyclone (ID No. CD-D1-1) are listed as a 15A NCAC 02Q .0501(c)(2) modification.
4 – 5	2.1 A – Equipment List and throughout permit condition	• Updated the woodworking operations and control configuration. • Removed references to emission source (ID No. ES-WW3)
5	2.1 A.2.c	Updated permitting language under 15A NCAC 02D .0521 to the current version.

Pages	Section	Description of Changes
--	--	Removed permit condition for 15A NCAC 02Q .0504. This requirement was met with the submittal of Permit Application No. 2400125.18A.
6	2.1 B – Equipment List	Changed the description of the boiler to "hybrid suspension grate wood-fired boiler."
6	2.1 B – Regulations Table	• Reordered the table to follow order of regulations. • Added reference to MACT Subpart DDDDD.
6	2.1 B.1.c	Updated test dates for boiler under 15A NCAC 02D .0504.
--	2.1 B.3.c (old numbering)	• Removed requirements to re-establish "normal" opacity within 30 days of permit issuance. • Renumbered permit condition accordingly.
7	2.1 B.3.c (new numbering)	Updated permitting language under 15A NCAC 02D .0521 to the current version.
8	2.1 B.4	• Moved permit condition for 15A NCAC 02D .0530(u) to follow order of regulations. • Renumbered permit accordingly.
8 – 9	2.1 B.5	Updated permitting language for compliance assurance monitoring under 15A NCAC 02D .0614 to current language.
9	2.1. B.6.b	Modified condition to remove initial compliance date for the Case-by-Case MACT and the date of initial annual compliance certification. These requirements have been met.
10	2.1 B.6.c	Changed testing language to allow testing every five years for any pollutant with emission rates less than or equal to 80 percent of the allowable limit under 15A NCAC 02D .1109, Case-by-Case MACT.
11	2.1 B.6.k	Removed reference to submittal of first summary report. This date occurred in 2014 and is no longer relevant.
11 – 14	2.1 B.7	Added permit condition for 15A NCAC 02D .1111 as promulgated in 40 CFR 63, Subpart DDDDD.
14	2.1 C – Equipment List	Modified the description of the continuous steam-heated, dual path lumber drying kilns (ID Nos. ES-CDPK1 and ES-CDPK2) to be consistent throughout the permit.
14	2.1 C – Regulations Table	• Removed reference to 15A NCAC 02D .0530(u). No projected actual emissions of PM2.5 were used to avoid applicability to PSD for the continuous dual path kilns (ID Nos. ES-CDPK1 and ES-CDPK2). • Added board feet limit for the kilns.
15	2.1 C.1.b	Updated testing language with the current version.
15	2.1 C.3.b	Updated testing language with the current version.
16	2.1 C.3.f	Updated reporting language with the current version.
16	2.1 D.1.b	Updated testing language with the current version.
17	2.1 D.1.e	Updated reporting language with the current version.
--	2.1 E	Removed permit condition for the diesel-fired fire water pump and the diesel-fired emergency generator (ID Nos. IES-FP-1 and IES-EG-1). These emission sources are considered insignificant activities in accordance with 15A NCAC 02Q .0503(8) and were moved to the insignificant activities list.
18 – 26	Section 3	Updated the General Conditions to the current revision (V5.2 04/03/2018).
27	Attachment	Updated the list of acronyms.

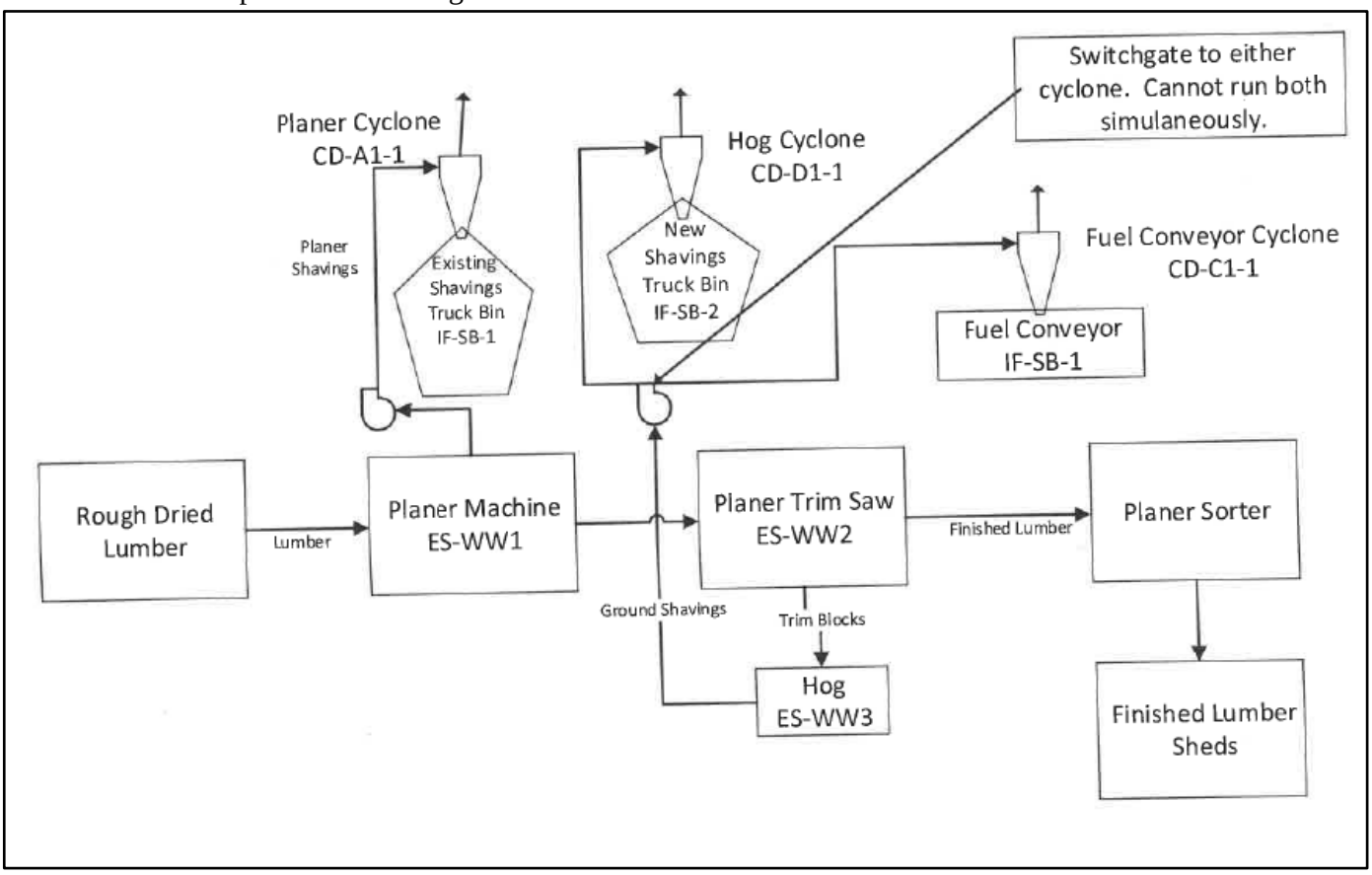
The following changes were made to the Title V Equipment Editor (TVEE) under this permit renewal/modification:

- Moved the emergency engines (ID Nos. IES-FP-1 and IES-EG-1) to the insignificant activities list.

- Added a sawdust bin (ID No. IF-SB-3) to the insignificant activities list.
- Added "MACT Subpart DDDDD" label to the HSG boiler (ID No. ES-BW-1).
- Changed the description of the woodwaste collection system (ID No. ES-WW1) to the "Planer Machine."
- Changed the description of the woodwaste collection system (ID No. ES-WW2) to the "Planer Trim Saw and Hog."
- Added cyclone (ID No. CD-D1-1) as control to the Planer Trim Saw and Hog (ID No. ES-WW2).
- Removed the wood residuals hogged planer (ID No. ES-WW3).
- Modified the throughput of the steam-heated, low temperature lumber drying kiln (ID No. ES-K1-4).

5. "Part 2" Application for Wood Residuals Project

The woodworking operations at West Fraser include a planer machine (ID No. ES-WW1) and planer trim saw and hog (ID No. ES-WW2), and associated wood handling/ particulate control cyclones (ID Nos. CD-A1-1, CD-C1-1, and CD-D1-1). Residual material from the hog is highly marketable as a fuel source. This wood residuals material was previously sent from the hog to the fuel chain cyclone (ID No. CD-C1-1), where it was used as a supplemental fuel for the wood-fired boiler. West Fraser added a new cyclone (ID No. CD-D1-1) and new planer hog shavings truck bin (ID No. IF-SB-2) to Air Permit No. 02248T29. The addition of this new equipment is referred to as the wood residuals project throughout this permit review. With the addition of the new cyclone and truck bin, the material from the hog can now be transported to the new bin for storage until it can be sold OR the material can be sent to the fuel change cyclone and used as supplemental fuel for the boiler. The residuals material from the hog can be sent to either of the cyclones (ID Nos. CD-C1-1 or CD-D1-1), but both cyclones cannot be operated simultaneously. A diagram of the woodworking operations at West Fraser is provided in the figure below:



A wood residuals planer hog (ID No. ES-WW3), the new cyclone (ID No. CD-D1-1), and new the planer hog shavings truck bin (ID No. IF-SB-2) were first permitted under Air Permit No. 02248T29 issued on October 9, 2017. The permit review associated with this permit is provided in Attachment 4 to this document. Air Permit No. 02248T29 required West Fraser to file a Title V Air Quality Permit Application on or before 12 months after commencing operation of this emission source. The new truck bin and cyclone began operating on October 10, 2017, and application no. 2400125.18A was submitted on January 28, 2016, which is within 12 months of the commencement of operation.

The wood residuals planer hog (ID No. ES-WW3) was in existence at the facility prior to the issuance at the Air Permit No. 02248T29. It was added to the permit at that time as a separate emission source. As shown in the figure above, it is more appropriately considered as part of the planer trim saw and hog operations. The permit will be modified as shown below to reflect the correct configuration of the woodworking operations.

Emission Source (ID No._	Emission Source Description	Control Device (ID No.)	Control Device Description
Woodworking Operations under Air Permit No. 02248T29			
ES-WW1	Woodwaste collection system	CD-A1-1	cyclone (192 inches in diameter)
ES-WW2	Woodwaste collection system	CD-C1-1	cyclone (96 inches in diameter)
ES-WW3	Wood Residuals Hogged Planer	CD-D1-1	cyclone (112 inches in diameter)
Actual Configuration of Woodworking Operations			
ES-WW1	Planer machine	CD-A1-1	cyclone (192 inches in diameter)
ES-WW2	Planer trim saw and hog	CD-C1-1 OR CD-D1-1	cyclone (96 inches in diameter) OR cyclone (112 inches in diameter)

Emissions

Potential emissions resulting from the wood residuals project as reported in the "Part 2" permit application are provided in the table below. Potential emissions were based on an emission factor (lb/hr) reported in the 4th Edition of EPA's AP-42. As indicated in the permit application, material that can be processed by the new cyclone (ID No. CD-D1-1) is roughly 10 percent of what can be processed through the entire planer mill operations. Therefore, potential operating hours on that cyclone are roughly 10 percent of the potential operating hours for the entire operation. For the purpose of emission calculations, the potential operation of the new cyclone has been set to 8,760 as a conservative estimate.

Baseline emissions were determined using 2016 and 2015 emission data for the fuel chain cyclone. These were the two most recent years prior to the submittal of the "Part 1" permit application.

The potential emissions were then compared to the baseline emissions to determine if the wood residuals project triggered a PSD review. As shown in the table below, emission increases are less than the significant emission rates (SER) for particulate matter (PM), PM10, and PM2.5, and no PSD review is required.

Pollutant	Baseline Emissions (tpy)	Potential Emissions (tpy)	Emission Increase (tpy)	SER	PSD Triggered
PM (TSP)_	0.4	8.8	8.4	25	No
PM10	0.2	5.7	5.5	15	No
PM2.5	0.1	3.1	3.0	10	No

Notes

- Baseline emissions are from the woodwaste collection system (ID No. ES-WW2) controlled via the fuel chain cyclone (ID No. CD-C1-1). Emissions from calendar year 2015 and 2016 (i.e., a two year look back).
- Potential emissions are based on the planer trim saw and hog (ID No. ES-WW2) controlled via the new hog cyclone (ID No. CD-D1-1).
- Emission factor (lb/hr) for PM taken from 4th Edition of AP-42, Section 10.4, Table 10.4.1. Hours of operation assumed to be 8,760 hours per year.
- Particle size distribution was assumed to be 64.5% PM10 and 34.95% PM 2.5, based on emission testing of a similar source at the West Fraser Henderson Lumber Mill.
- Per application submittal, material that can be processed by the cyclone is roughly 10% of what can be processed through the entire operation; therefore, potential operating hours on that cyclone are roughly 10% of the potential operating hours for the entire operation. For the purpose of these calculations, the potential operation of the new cyclone has been set to 8,760 to be grossly conservative.

West Fraser estimated PM emissions from the new cyclone using an emission factor for PM from the 4th Edition of EPA's AP-42. This emission factor has been removed from the current edition of AP-42. Further, the emission factor is provided in terms of pounds per hour, and no other Title V lumber mill in North Carolina uses this approach to estimate emissions from woodworking operations. Other lumber mills estimate woodworking emissions based on tons of woodwaste produced or board feet of lumber processed. Because the emission factor is no longer supported by EPA and because other lumber mills do not use this estimation method, the DAQ investigated two alternative methodologies for estimating PM emissions from the wood residuals project. The discussion of the alternative approaches, calculations, and emission estimates are provided in Attachment 1. As seen in the attachment, emissions of PM/PM10/PM2.5 differ than emissions using the West Fraser methodology, and West Fraser emissions are within the range of the alternative methods. Results of both alternative methodologies are below the respective SERs. Thus, DAQ deems the West Fraser methodology acceptable.

Regulatory Review

The regulatory review associated with the "Part 2" permit application is included below in Section 8.

6. Background and Changes to Testing Requirements

The HSG boiler (ID No. ES-BW-1) is subject to 15A NCAC 02D .1109, Case-by-Case MACT. West Fraser is required via permit to conduct stack testing of the boiler to demonstrate compliance with allowable limits under the Case-by-Case MACT for carbon monoxide (CO). The facility has elected to demonstrate compliance with emission limits for hydrogen chloride equivalents (HCl), mercury (Hg), and total selective metals (TSM) using fuel analysis.

Following the initial performance test, West Fraser is required to conduct each subsequent performance test between 22 and 26 months after the previous stack test. The initial compliance test was conducted on November 12, 2014 and the second required stack test was conducted on

December 13, 2016. Results of both stack tests are provided in the table below. The boiler demonstrated compliance with the allowable limits under the Case-by-Case MACT during both performance tests.

Pollutant	Test Date	Emission Rate	Emission Limit	% of Emission Limit	Compliance
CO	11/12/2014	2,185 ppmvd @ 3% O_2	2,800 ppmvd @ 3% O_2	78%	Yes
	12/13/2016	1,946 ppmvd @3% O_2		70%	Yes

Notes:
- The November 12, 2014 test results were reviewed and approved by James Hammond of the Stationary Source Compliance Branch (SSCB) in a memorandum dated July 1, 2015.
- The December 13, 2016 test results were reviewed and approved by Shannon Vogel of the SSCB in a memorandum dated March 10, 2017.

On September 19, 2016, West Fraser submitted a permit application to modify the testing requirements for the HSG boiler (ID No. ES-BW-1) under the Case-by-Case MACT. West Fraser is requesting to conduct stack testing every five years for pollutants with emission rates less than or equal to 80 percent of the allowable limits. Biennial testing (every 2 year) will be required for all pollutants with emission rates within 80 percent of the allowable limits. This testing frequency is consistent with boilers subject to the Case-by-Case MACT at other lumber kilns across the state.

The DAQ agrees this change in testing language is appropriate and is consistent with other lumber mills. DAQ will revise the testing language for the HSG boiler (ID No. ES-BW-1) under the Case-by-Case MACT as part of this permit modification. The revised testing language is provided below:

Section 2.1 B.6.c

Compliance Testing *[15A NCAC 02Q .0508(f)]*

c. To demonstrate compliance with the standards provided in Section 2.1 B.6.a above, the Permittee shall conduct compliance tests for each listed pollutant. The Permittee may choose either of the following methods for the compliance tests:

i. Initial & Periodic Stack Testing. Stack testing shall be performed in accordance with General Condition JJ. Tests may not be conducted during periods of startup, shutdown, or malfunction. Following the initial compliance test, the Permittee shall test the boiler biennially. Following the initial stack test, each test shall be conducted between 22 and 30 months after the previous stack test. However, if a stack test shows that the emission rate of any pollutant is less than or equal to 80 percent of the allowable limit, the stack test frequency shall be reduced to once every five years for that pollutant.

ii. Periodic Fuel Analysis. The Permittee may use a fuel analysis to demonstrate compliance with the TSM, mercury and/or HCl-equivalent standards. Fuel analyses shall be conducted annually. Following the initial fuel analysis, each analysis shall be conducted between 11 and 13 months after the previous analysis. If a fuel analysis shows a potential exceedance of an emission limitation in Section 2.1 B.6.a above, the Permittee shall conduct a follow-up stack test of the affected source within 90 days. If the follow-up stack test shows an exceedance of the limit, the Permittee shall be deemed in non-compliance with 15A NCAC 02D .1109.

The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1109 if the required compliance tests are not conducted, or if the results of a compliance test exceed a limit in Section 2.1 B.6.a above.

7. Emergency Engines

West Fraser has two existing emergency engines (ID Nos. ES-FP-1 and ES-EG-1) on its permit. The permitting history for these engines is a bit complicated. At one time, these engines were included on the insignificant activities list. These engines were then moved onto the body of the permit under Air Permit No. 02248T25 issued on October 3, 2012. This change was made in accordance with 15A NCAC 02Q .0705, Existing Facilities and SIC Calls for Toxic Air Pollutant Emissions Limitation. All air toxics conditions were later removed from the permit under Air Permit No. 02248T26 issued on December 18, 2013 because the DAQ demonstrated there was no unacceptable health risk with the removal of NC Air Toxic Conditions, 15A NCAC 02D .1100 and 02D .0705[2]. However, the engines remained on the permit.

Emissions from these emergency engines (ID Nos. ES-FP-1 and ES-EG-1) are less than significant levels in 15A NCAC 02Q .0503(8) as shown in the table below, and these engines will be moved to the insignificant activities list under this permit renewal/modification. However, the engines remain subject to all applicable rules, including MACT Subpart ZZZZ. Continued compliance with all applicable rules is anticipated

Pollutant	Emergency Fire Pump (ID No. ES-FP-1) (ton/yr)	Emergency Generator (ID No. ES-EG-1) (ton/yr)
PM	0.10	0.09
PM10	0.10	0.09
PM2.5	0.10	0.09
SO2	0.06	0.05
NOx	1.43	1.29
CO	0.31	0.28
VOC	0.12	0.10

Notes:
Emissions were calculated using DAQ's "Gas & Diesel Internal Combustion Engines for Small Engines Emissions Calculator Revision S 06/22/2015." The following inputs were used:
Engine Output: 185bhp for ES-FP-1 and 166 bhp for ES-EG-1
Operation Hours: 500 hours for emergency engines
Sulfur content: 0.15% sulfur in diesel fuel

8. Regulatory Review

West Fraser is subject to the following regulations. The permit will be updated to reflect the current stipulations for all applicable regulations.

- 15A NCAC 02D .0504, Particulates from Wood Burning Indirect Heat Exchangers – The HSG boiler (ID No. ES-BW-1) is subject to 02D .0504. Allowable PM emissions are determined from

[2] Jenny Kelvington (12/8/2013)

the equation $E = 1.1698(Q)^{-0.2230}$, where E equals the allowable emission limit for PM (in pounds per million Btu) and Q equals the maximum heat input in million Btu per hour. With a Q of 104.3 million Btu/hr, the allowable PM emissions from this boiler equals 0.41 pounds per million Btu. West Fraser must conduct inspection and maintenance on the multicyclone (ID No. CD-3) and wet venturi scrubber (ID No. CD-2) to ensure compliance with this rule. No changes to the monitoring, recordkeeping, or reporting (MRR) is required under this permit renewal/modification. Continued compliance is anticipated.

West Fraser was required to test the boiler and submit results by December 12, 2014 to ensure compliance with 02D .0504. Testing occurred on November 12, 2014, and the testing results demonstrated compliance with 02D .0504 as shown in the table below:

Pollutant	Emission Rate	Emission Limit	Compliance
Filterable PM	0.09 lb/mmBtu	---	---
Condensible PM	0.01 lb/mmBtu	---	---
Total PM	0.10 lb/mmBtu	0.41 lb/mmBtu	02D .0504

Notes:
- mmBtu = million Btu
- The test results were reviewed and approved by James Hammond of the Stationary Source Compliance Branch (SSCB) in a memorandum dated July 1, 2015.

West Fraser has elected to comply with a TSM limit and fuel analysis under the Case-by-Case MACT rather than demonstrating compliance via a PM limit and source testing. Because the facility has elected not to conduct PM testing for compliance with the Case-by-Case MACT, the DAQ recommends PM testing requirements be retained in the permit for compliance with 02D .0504. Testing will be required once per five-year permit cycle, and the permit condition will be updated to reflect the revised test date.

- 15A NCAC 02D .0512, Particulates from Wood Products Finishing Plants – The woodworking operations (ID Nos. ES-WW1 and ES-WW2) are subject to 02D .0512. West Fraser must conduct inspection and maintenance of the control devices on these sources to ensure compliance. No changes to the MRR requirements are needed under this renewal/modification, and continued compliance is anticipated.

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – The continuous steam-heated, dual path lumber drying kilns (ID Nos. ES-CDPK1 and ES-CDPK2) are subject to 02D .0515. Allowable emissions of PM are calculated from the following equation:

$E = 4.10(P)^{0.67}$ For process weight rates less than or equal to 30 tons/hr
$E = 55.0(P)^{0.11} - 40$ For process weight rates greater than 30 tons/hr

For both equations:
E = allowable emission limit for particulate matter in lb/hr; and
P = process weight rate in tons/hr.

The permit review for the addition of the kilns indicated the maximum lumber drying rate for each kiln is 157,000 board feet per hour or 29.7 tons per hour. With this process rate, the

allowable emissions are 39.7 pounds per hour per kiln[3]. As reported in DAQ's emission inventory, the maximum actual PM emissions from the kilns since beginning operation was 2.97 tons/yr in 2015. This emission rate equals 0.34 lbs/hr per kiln, which demonstrates compliance with 02D .0504.

No MRR is required for PM emissions from the drying of lumber in the kilns. Continued compliance is expected.

- 15A NCAC 02D .0516, Sulfur Dioxide from Combustion Sources – The HSG boiler (ID No. ES-BW-1) is subject to 02D .0516. No MRR is required when firing wood in this combustion source because of the low sulfur content of the fuel. This fuel is inherently low enough in sulfur that continued compliance is expected.

- 15A NCAC 02D .0521, Control of Visible Emissions – The emission sources cited below are subject to 02D .0521. The equipment was manufactured after July 1, 1971 and must not have visible emissions of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d).
  - Two continuous steam-heated, dual path lumber drying kilns (ID Nos. ES-CDPK1 and ES-CDPK2) – No MRR is required for visible emissions from the kilns. No changes are required under this permit renewal/modification, and continued compliance is expected.
  - Woodworking operations (ID Nos. ES-WW1, ES-WW2, and ES-Fugl-L1-1) – West Fraser must make visible observations every week to ensure compliance with 02D .0521. The permit will be updated to reflect the current permitting language, and continued compliance is expected.
  - HSG wood-fired boiler (ID No. ES-BW-1) – West Fraser must make daily visible observations to ensure compliance with 02D .0521. The permit will be updated to reflect the current permitting language.

    The HSG boiler also has a requirement under 02D .0521 to re-establish "normal" visible emissions within 30 days of permit issuance. This condition was added to Air Permit No. 02248T25 issued on October 3, 2012, when the continuous kilns were permitted. This condition was added because the steam usage of the boiler was expected to increase with the addition of the continuous kilns, even though the boiler itself was not modified as part of the CDP project. The need to re-establish "normal" visible emissions has been met, and this requirement will be removed under the permit renewal/modification. Continued compliance is expected.

- 15A NCAC 02D .0530, Prevention of Significant Deterioration – The continuous steam-heated, dual path lumber drying kilns (ID Nos. ES-CDPK1 and ES-CDPK2) and the steam-heated lumber kiln (ID No. ES-K1-4) are subject to Best Available Control Technology (BACT) limits under PSD. More discussion on PSD and BACT is provided in Section 9.

- 15A NCAC 02D .0530(u) – West Fraser used projected actual emissions (PAE) for the HSG wood-fired boiler to demonstrate the addition of two steam-heated CDP lumber drying kilns would not result in a significant emissions increase of any NSR pollutant other than VOCs. More discussion of 02D .0530(u) and PSD is provided in Section 9.

[3] Jenny Kelvington (10/3/2012).

- 15A NCAC 02D .0614, Compliance Assurance Monitoring – The HSG wood-fired boiler (ID No. ES-BW-1) is subject to CAM. More discussion on CAM is provided in Section 9.

- 15A NCAC 02D .1109, Case by Case Maximum Achievable Control Technology – The HSG boiler (ID No. ES-BW-1) is subject to 02D .1109. The requirements for the Case-by-Case MACT for the boiler were added to Air Permit No. 02248T23 issued on May 16, 2011. More discussion on Case-by-Case MACT is provided under Section 9.

- 15A NCAC 02D .1111, Maximum Achievable Control Technology (MACT) – West Fraser is subject to the following MACTs:
  - NESHAP for Plywood and Composite Wood Products, 40 CFR Part 63 Subpart DDDD.
  - NESHAP for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ.
  - NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters," 40 CFR 63 Subpart DDDDD (also referred to as the Boiler MACT or MACT 5D in this document). West Fraser must be in compliance with this rule by May 20, 2019.

  More discussion on these MACTs is provided in Section 9.

- 15A NCAC 02D .1806, Control and Prohibition of Odorous Emissions – This condition is applicable facility-wide and is state-enforceable only. Continued compliance is anticipated.

9. NSPS, NESHAPS/MACT, NSR/PSD, 112(r), CAM

NSPS

The diesel-fired emergency fire pump (ID No. IES-FP-2) is subject to Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60 Subpart IIII. West Fraser complies with NSPS Subpart IIII by purchasing an engine certified to NSPS Subpart IIII for the same model year and maximum engine power for this engine.

No other emission sources at West Fraser are subject to New Source Performance Standards. This permit renewal/modification does not affect the NSPS status of the facility.

NESHAPS/MACT

West Fraser is major source of hazardous air pollutants (HAPs) and is subject to the following MACT standards.

MACT Subpart DDDD

The continuous steam-heated, dual path lumber drying kilns (ID Nos. ES-CDPK1 and ES-CDPK2) and the steam-heated lumber kiln (ID No. ES-K1-4) are subject to the NESHAP for Plywood and Composite Wood Products, 40 CFR Part 63 Subpart DDDD. The only requirement under MACT Subpart DDDD for these emission sources is an initial notification.

MACT Subpart ZZZZ

The diesel-fired fire water pump (ID No. IES-FP-2; 183 bhp) is subject to the NESHAP for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ. This engine is a compression ignition, new engine, constructed after June 12, 2006. It is less than 500 hp and is located at a major source of HAPs. Pursuant to 40 CFR 63.6590(c)(6), West Fraser meets the requirements of 40 CFR 63 Subpart ZZZZ for this engine by meeting the requirements

of 40 CFR part 60 Subpart IIII. No further requirements apply to this engine. Continued compliance is anticipated

The diesel-fired fire water pump (ID No. IES-FP-1; 185 bhp) and diesel-fired emergency generator (ID No. IES-EG-1; 166 bhp) are also subject to 40 CFR Part 63 Subpart ZZZZ. Both existing engines are compression ignition, constructed before June 12, 2006. They are less than 500 hp and are located at a major source of HAPs. The following is a summary of the requirements for these engines.

- Install a non-resettable hour meter on the engine
- Change oil and filter every 500 hours of operation or annually
- Inspect all hoses and belts every 500 hours of operation or annually and replace if necessary
- Inspect air cleaner every 1,000 hours of operation or annually
- Operate no more than 100 hours for maintenance and readiness testing
- Recordkeeping and reporting requirements

As noted in Section 6 above, emission from these engines meet the definition of insignificant activities under 15A NCAC 02Q .0503(8). These engines will be moved to the insignificant activities list under this permit renewal/modification, at the request of West Fraser. However, the engines remain subject to all applicable rules, including MACT Subpart ZZZZ. Continued compliance is anticipated

Case-by-Case MACT
The HSG wood-fired boiler (ID No. ES-BW-1) is subject to the Case-by-Case MACT. Requirements were added under Air Permit No. 02248T27 issued on May 16, 2011. The CO emissions were later increased under Air Permit No. 02248T27 issued on November 10, 2014 because the boiler was deemed to be an HSG boiler. Current emission limits for the boiler are provided in the table below.

Pollutant	Limit
Total Selected Metals (TSM)	0.0003 lb/ million Btu
Mercury (Hg)	0.000005 lb/ million Btu
Hydrogen Chloride equivalent (HCl)	188.5 lb/ hr
Carbon Monoxide	2,000 ppmvd, corrected to 3% oxygen

West Fraser has elected to demonstrated compliance with emission limits for HCl, Hg, and TSM using fuel analyses, which are conducted annually. Each analysis must be conducted between 11 and 13 months after the previous analysis.

West Fraser demonstrates compliance with the CO emission limits by conducting source tests biennially. The facility conducted source testing in 2014 and 2016 to demonstrate compliance with the CO emission limits. The permit is being modified under this permit renewal/modification to allow West Fraser to conduct stack testing every five years if CO emission rates are less than or equal to 80 percent of the allowable limits. The revised testing language is provided above in Section 6.

MACT Subpart DDDDD

The wood-fired boiler (ID No. ES-BW-1) is subject to the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR Part 63 Subpart DDDDD, beginning May 20, 2019. The boiler falls under the subcategory for "hybrid suspension/grate burners designed to burn wet biomass/bio-based solids." The biomass fuel fired must exceed a moisture content of 40 percent on an as-fired annual heat input basis as demonstrated by monthly fuel analysis for the boiler to be considered a HSG boiler. Emission limits for HSG boilers under MACT 5D are provided in the table below.

Pollutant	**Emission Limit**
Hydrochloric Acid(HCl)	2.2E-02 lb per million Btu (MMBtu) of heat input
Mercury (Hg)	5.7E-06 lb per MMBtu of heat input
Carbon monoxide (CO)	3,500 ppm by volume on a dry basis corrected to 3 percent oxygen, 3 run average or (900 ppm by volume on a dry basis corrected to 3 percent oxygen, 30-day rolling average)
Filterable PM or Total Suspended Metals (TSM)	4.4E-01 lb per MMBtu of heat input 4.5E-04 lb per MMBtu of heat input

West Fraser anticipates it can comply with the MACT 5D emission limits with its current control configuration of a multicyclone (ID No. CD-3) and venturi wet scrubber (ID No. CD-2). The facility must conduct initial testing to demonstrate compliance with these emission limits within 180 days of May 20, 2019 or by November 19, 2019. Results must be submitted no later than 60 days after completing the testing.

During initial testing, West Fraser must establish a pressure drop and liquid flow rate across the venturi. The facility must then maintain the 30-day rolling average pressure drop and the 30-day rolling average liquid flow rate at or above the lowest one-hour average pressure drop and the lowest one-hour average liquid flow rate, respectively, measured during the performance test. Testing is required annually unless two subsequent performance tests demonstrate 75 percent or less of the compliance level. Testing can then be reduced to every three years.

If the facility elects to demonstrate compliance with the Hg, HCl, or TSM based on fuel analyses, the facility must conduct a monthly fuel analysis. If each of 12 consecutive monthly fuel analyses demonstrates 75 percent or less of the compliance level, the facility can decrease the fuel analysis frequency to quarterly for that fuel.

To ensure compliance with the CO limit, West Fraser has elected to install, operate, and maintain an oxygen analyzer system and continuously measure oxygen content. The facility must maintain the 30-day rolling average oxygen content at or above the lowest hourly average oxygen level measured during the CO performance test.

The facility must conduct an initial compliance tune up and one-time energy assessment. These activities must be completed by May 20, 2019. Tune-ups are required annually.

The permit condition for the Boiler MACT is provided in Attachment 2.

PSD

West Fraser is a PSD major source for VOC and CO, with potential emissions of these pollutants greater than 250 tons per consecutive 12-month period. West Fraser is subject to BACT for its two continuous steam-heated dual path kilns (ID Nos. ES-CDPK1 and ES-CDPK2) and its steam-heated batch kiln (ID No. ES-K1-4). The BACT limits for each kiln is provided in the table below:

Emission Source	BACT Limit	Comments
ES-K1-4	94.26 tons of VOC per consecutive 12-months 5.73 pounds of VOC per MBF of lumber dried	Final BACT determination dated March 11, 1997
ES-CDPK1 and ES-CDPK2	282.4 tons of VOC per consecutive 12-months, per kiln 4.11 pounds of VOC per MBF of lumber dried 137,415 MBF of lumber dried per 12-months, per kiln	Final BACT determination dated October 3, 2012
Notes: MBF = thousand board feet		

This permit renewal/modification does not affect the status, and no changes to the BACT permit conditions are required. Continued compliance is anticipated.

For the project to add continuous kilns (ID Nos. ES-CDPK1 and ES-CDPK2) (aka called the CDP kiln project) to the facility, West Fraser relied on the use of PAE for the wood-fired boiler to demonstrate that the addition of the continuous kilns would not result in a significant emissions increase of any NSR pollutant other than VOC. West Fraser must track the amount of green wood fired in the boiler (ID No. ES-BW-1) for five years to demonstrate that no other pollutant associated with the CDP kiln project exceeds the PSD significant increase threshold. The projected throughput of green wood in the boiler is provided below.

Parameter	Projection (annual unless otherwise provided)
Tons of wood combusted in the boiler (ID No. ES-BW-1)	81,381 tons of green wood per year

The tracking requirements under 02D .0530(u) were added to Air Permit No. 02248T25 issued on October 3, 2012. The facility is required to maintain records and reports for five years "following regular operations after the change." For this case, the change is the addition of the two continuous kilns. The North CDP kiln was completed and brought on line April 13, 2013. The South CDP kiln was brought on line September 12, 2013. Therefore, the requirements to maintain records and submit will continue until the end of 2018. The 02D .0530(u) conduction will remain in the permit at this time.

112(r)

The facility is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in 112(r). This permit renewal/modification does not affect the 112(r) status of the facility.

CAM

40 CFR Part 64, Compliance Assurance Monitoring, is applicable to any pollutant-specific emission unit (PSEU), if the following three conditions are met:

- the unit is subject to any (non-exempt: e.g. pre-November 15, 1990, Section 111 or Section 112 standard) emission limitation or standard for the applicable regulated pollutant.
- the unit uses any control device to achieve compliance with any such emission limitation or standard.
- unit's precontrol potential emission rate exceeds either 100 tons/yr (for criteria pollutants) or 10/25 tons/yr (for HAPs).

CAM applicability for the facility's control devices was established during the first Title V renewal process.[4] CAM was determined to apply only to the HSG wood-fired boiler (ID No. ES-BW-1) at that time. The facility monitors visible emissions from the boiler under CAM. The permit condition will be updated under this permit renewal/modification to reflect the current CAM language for monitoring visible emissions. Attachment 3 provides the revised CAM language.

When the CAM condition was first established, the cyclones on the woodworking operations were determined not to be subject to CAM. The cyclones were determined to be used primarily as equipment transfer and collection units that capture usable or saleable product such as wood chips and shavings and not as control equipment. Although the cyclones are used to transfer and collect saleable product, they are also required on the woodworking operations by 02D .0512. This rule specifies the following:

> ***15A NCAC 02D .0512 PARTICULATES FROM WOOD PRODUCTS FINISHING PLANTS***
> *A person shall not cause, allow, or permit particulate matter caused by the working, sanding, or finishing of wood to be discharged from any stack, vent, or building into the atmosphere without providing, as a minimum for its collection, adequate duct work and properly designed collectors, or such other devices as approved by the Commission, and in no case shall the ambient air quality standards be exceeded beyond the property line. Collection efficiency shall be determined on the basis of weight.*

Therefore, the cyclones must be evaluated for CAM for the woodworking operations. Precontrolled emission of PM10 from the woodworking operations were calculated using two different methodologies. The first methodology was used by West Fraser in the permit application (2400125.18A) for the residuals wood project. The second approach was based on EPA's Region 10 memorandum as discussed in Attachment 1. A third approach using the DAQ spreadsheet was not utilize because the spreadsheet reports no PM10/PM2.5 emissions from planing and hogging operations.

The precontrolled emissions from the woodworking operations are provided in the following table. As shown in the table, the precontrolled emissions are less than 100 tons per year. Therefore, the woodworking operations with associated cyclones are not subject to CAM.

[4] Booker Pullen (08/31/2006).

Estimating Precontrolled Emissions from the Woodworking Operations (ID Nos. ES-WW1 and ES-WW2)

Emissions Calculated Using EPA Region 10 Memo

Emission Source	Potential MBF/yr	Potential Woodwaste Sent to Planer (ton/yr)	Emission Factor (lb PM /ton woodwaste)	PM Emissions from Cyclone (ton/yr)	PM10 Emissions from Cyclone (ton/yr)	PM2.5 Emissions from Cyclone (ton/yr)	Precontrolled PM10 Emissions (ton/yr)	Precontrolled PM2.5 Emissions (ton/yr)
ES-WW1	294,830	100,242	0.20	10.0	9.5	8.0	34.0	8.0
ES-WW2		11,138		1.1	1.1	0.9	3.8	0.9
Total from Woodworking Operations		111,380		11.1	10.6	8.9	37.8	8.9

Notes:

- The woodwaste sent to the planer was based on values reported in the West Fraser – Seaboard application (6600041.16A). The Seaboard facility estimated 68,000 tons per year of woodwaste were produced for 200,000 MBF per year. Approximately 100,242 tons/year are estimated when this amount is scaled to the potential board feet per year (294,830 MBF/year) at West Fraser – Armour.
- Permit application no. 2400125.18A indicates the planer trim saw and hog account for approximately 10% of the total mill planer residuals. Therefore, 90% of the woodwaste results from the planer. The total woodwaste can then be estimated as (100,242 tons/yr)/ (0.90) for 111,380 tons per year of woodwaste from the total mill planer residuals.
- Permit application no. 2400125.18A indicates 72% control for PM10 and 0% control for PM2.5 from the cyclone.
- An emission factor 0.2 lb PM /bone dried tons of woodwaste for a high efficiency cyclone was reported in the EPA Region 10 memorandum. 95% of the total PM emissions was shown to be PM10 and 80% was shown to be PM2.5.

Emissions Calculated Using West Fraser Method

Emission Source	Hours per year	Emission Factor (lb/hr)	PM Emissions from Cyclone (ton/yr)	PM10 Emissions from Cyclone (ton/yr)	PM2.5 Emissions from Cyclone (ton/yr)	Precontrolled PM10 Emissions (ton/yr)	Precontrolled PM2.5 Emissions (ton/yr)
ES-WW1	8,760	2	8.8	5.7	3.1	20.2	3.1
ES-WW2	876	2	0.9	0.6	0.3	2.0	0.3
Total from Woodworking Operations	--	--	9.6	6.2	3.4	22.2	3.4

Notes:

- For the West Fraser Method, the emission factor for PM was taken from 4th Edition of AP-42, Section 10.4, Table 10.4.1.
- Particle size distribution was assumed to be 64.5% PM10 and 34.95% PM 2.5, based on emission testing of a similar source at the West Fraser Henderson Lumber Mill.
- Permit application no. 2400125.18A indicates 72% control for PM10 and 0% control for PM2.5.

9. Facility Wide Air Toxics

NC air toxic limits were removed as part of the significant modification for Air Permit No. 02248T26 issued on December 18, 2013. Prior to this modification, the air permit contained toxic air pollutant (TAP) limits for the continuous steam-heated, dual path lumber drying kilns (ID Nos. ES-CDPK1 and ES-CDPK2), the diesel-fired fire water pump (ID No. IES-FP-1), and the diesel-fired emergency generator (ID No. IES-EG-1). These sources are subject to 40 CFR Part 63 and therefore exempt from state air toxic rules, provided facility wide toxic emissions pose no unacceptable risk to human health.

As indicated in the permit review for Air Permit No. 02248T26, West Fraser's air modeling was reviewed, and concentrations of benzene were observed to have the highest percentage of its acceptable ambient level (AAL) among all the TAPs modeled. Concentration of benzene were at 32.2 percent of its AAL. Given the large margin of compliance with the AAL for benzene, DAQ concluded removing NC Air Toxic Limits did not pose an unacceptable risk to human health. Requirements for 15A NCAC 02D .1100 and 02Q .0705 were removed from under Air Permit No. 02248T26.

This permit renewal/modification does not affect the facility's status with respect to NC Air Toxics.

10. Facility Emissions Review

Potential emissions in the table below were provided in Permit Application No. 2400125.18A, which is the "Part 2" permit application for the residuals wood project. Actual emissions for 2012 through 2016 are provided in the header of this permit review.

Pollutants	Potential Emissions (before controls/limits) ton/yr	Potential Emissions (after controls/limits) ton/yr
PM	888	321
PM10	649	136
PM2.5	546	69
SO2	46	34
NOx	202	202
CO	550	550
VOC	559	559
CO2e	189,267	189,267
Notes: CO_2 equivalent (CO2e) is defined as the sum of individual greenhouse gas pollutant emission times their global warming potential, converted to metric tons.		

9. Compliance Status

The most recent inspection was conducted on May 31, 2017 by Russell Morgan of the WiRO. The facility appeared to operate in compliance with all applicable air quality regulations and permit conditions at the time of inspection. Additionally, a signed Title V Compliance Certification (Form E5) indicating the facility was in compliance with all applicable requirements was included with the application for permit renewal.

A Notice of Deficiency (NOD) was issued on July 30, 2015 for failing to consistently maintain the pressure drop for the venturi scrubber (ID No. CD-2) on the hybrid suspension grate wood-fired boiler (ID No. ES-BW-1) above the minimum pressure required by permit. This NOD has been resolved.

10. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period for the public, with an opportunity for a public hearing. Consistent with 15 A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 02Q .0521 above. The state of South Carolina is within 50 miles of the facility and will be notified accordingly.

11. Other Regulatory Considerations

- No P.E. seal was required for these permit applications.
- No zoning consistency determinations were required for these applications. Note a zoning consistency determination was required and was submitted with the "Part 1" application for the wood residuals project.
- Permit fees of $922 and $947 were required and were submitted with Permit Application Nos. 2400125.16B and 2400125.18A, respectively.

12. Recommendations

The permit renewal/modification applications for West Fraser, Inc. - Armour Lumber Mill in Riegelwood, Columbus County, NC has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. The DAQ recommends the issuance of Air Permit No. 02248T30.

Attachment 1

Alternative Methods for Estimating PM Emissions for Residuals Wood Project

Two alternate approaches were used to estimate PM emissions from the Residuals Wood Project, which consists of installing a new cyclone (ID No. CD-D1-1) and planer hog shavings truck bin (ID No. IF-SB-2) at West Fraser.

PM Emissions from DAQ Worksheet

The DAQ has created a woodworking spreadsheet for estimating emissions from planers, trimming, sawing, and sanding. The worksheet is entitled "Woodworking Emissions Calculator Revision C July 2007." PM emissions are based on the amount of woodwaste generated from the wood working operations at facility or from the board feet processed through these operations. Unfortunately, neither of these values are available for West Fraser.

The amount of woodwaste sent to the planer can be estimated using data from West-Fraser – Seaboard facility. In Permit Application No. 6600041.17A to replace the existing sawmill operations at West Fraser - Seaboard, the facility estimated 68,000 tons per year were produced for 200,000 MBF per year. The estimate for the Seaboard facility was based on 2015 data and included a safety factor for a conservative amount of woodwaste produced. Approximately 100,242 tons/year are estimated when this conservative amount is scaled to the potential board feet per year (294,830 MBF/year) at West Fraser – Armour.

The total amount of woodwaste from the planer was used to estimate the woodwaste generated from the planer trim saw and hog operation (ID No. ES-WW2). This value was then input into DAQ's woodworking spreadsheet. The table below contains the estimated woodwaste from ES-WW2 used to calculated potential emissions of PM. The output table from the DAQ spreadsheet follows.

Parameter	Value	Reference/Comments
Potential Board feet at West Fraser	ES-CDPK1 at 137,415 MBF/ year ES-CDPK1 at 137,415 MBF/ year ES-K1-4 at 20,000 MBF/year Facility Total = 294,830,000 bf/yr	Maximum permitted throughput
Amount of planer waste	Waste = 294,830,000 bf/yr (68,000 tpy /200,000,000 bf/yr) Waste = 100,242 tpy	Planer waste from ES-WW1 only.
Amount of planer waste at West Fraser	Waste = 100,242 tpy/0.90 Waste = 111,380	Planer waste from entire facility from ES-WW1 and ES-WW2, assuming 90% of the emissions are from ES-WW1, as indicated in the permit application.
Amount of waste from hog	Waste = 111,380 tpy * 0.10 Waste = 11,138 tpy = 2,543 lb/hr	Permit application indicates the planer trim saw and hog accounts for approximately 10% of the total mill planer residuals.

WOODWORKING EMISSIONS CALCULATOR REVISION C JULY 2007 - OUTPUT SCREEN

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	**West Fraser Armomr**	FACILITY ID NO.:	02248T29
		PERMIT NUMBER:	2400125
EMISSION SOURCE DESCRIPTION:	Trimmer and Hogger controlled by "high efficiency" cyclone.	FACILITY CITY:	Riegelwood
		FACILITY COUNTY:	Columbus
EMISSION SOURCE ID NO.:	ES-WW2	WOODWASTE CHARACTERIZATION	
SPREADSHEET PREPARED BY:	BLG	PLANING	%
TYPE OF WOOD:	DRY (< 19% MOISTURE)	SHAVING/CHIPPING	%
ACTUAL 'IN DUCT' WOODWASTE CALCULATED AS 0 TONS/YR FROM: BD-FT/YR, 3.5 LB/BD-FT, 33 % TOTAL WASTE, AND 100% OF THIS WASTE VENTED TO THE DUCTWORK		ROUGH SAWING	%
		FINE SAWING	%
POTENTIAL 'IN DUCT' WOODWASTE MANUALLY ENTERED AS 2542.92237442922 POUNDS PER HOUR		MILLING (& HOG)	100%
		MOLDING	0%
		SANDING	%

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - WOODWORKING

	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)		CONTROL EFFICIENCY
AIR POLLUTANT EMITTED	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	%
PARTICULATE MATTER (PM)	5.09	0.00	254.29	1113.80	5.09	22.28	98.00
PARTICULATE MATTER<10 MICRONS (PM_{10})	0.00	0.00	0.00	0.00	0.00	0.00	72.00
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Control efficiencies as reported in the permit application.

PM Emissions Calculated using EPA Region 10 Memorandum

The EPA Region 10 developed guidance for estimating emission from sawmills in a memorandum dated May 8, 2014 entitled, Particulate Matter Potential to Emit Emission Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country. This memorandum provides emission factors (lbs per bone dried ton) for PM, PM10, and PM2.5 for pneumatically conveyed material through a high efficiency cyclone to a bin. The woodwaste value estimated as discussed above can be used with these emission factors to estimate PM emissions from the planer trim saw and hog (ID No. ES-WW2), as shown in the following table:

Emission Source	Potential MBF	Potential Woodwaste Sent to Planer (ton/yr)	PM Emissions from Cyclone (ton/yr)	% PM10	PM10 Emissions from Cyclone (ton/yr)	% PM2.5	PM2.5 Emissions from Cyclone (ton/yr)
ES-WW1	294,830	100,242	10.0	95	9.5	80	8.0
ES-WW2		11,138	1.1	95	1.1	80	0.9
Total from Woodworking Operations		111,380	11.1	95	10.6	80	8.9

Notes:

- An emission factor 0.2 lb PM /bone dried tons for a high efficiency cyclone was reported in the EPA Region 10 memorandum. The percentages PM10 and PM2.5 as cited in the table above were also reported in the EPA Region 10 memorandum.
- Permit application no. 2400125.18A indicates the planer trim saw and hog account for approximately 10% of the total mill planer residuals.

Attachment 2
Permit Condition for MACT Subpart DDDDD

Section 2.1 B.7

7. 15A NCAC 02D .1111: MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY

Applicability [40 CFR 63.7485, 40 CFR 63.7490(d), 40 CFR 63.7499(h)]

a. For this sources (i.e., existing hybrid suspension/grate burners designed to burn wet biomass/bio-based solid with a heat input capacity 10 million Btu per hour or greater), the Permittee shall comply with all applicable provisions, including the monitoring, recordkeeping, and reporting contained in Environmental Management Commission Standard 15A NCAC 02D .1111 "Maximum Achievable Control Technology" (MACT) as promulgated in 40 CFR Part 63, Subpart DDDDD "National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters" (Subpart 5D) and Subpart A "General Provisions."
   i. The Permittee shall comply with the CAA §112(j) standard in Section 2.1 B.6 through May 19, 2019. The Permittee shall be subject to the requirements of this standard starting May 20, 2019. Note that the requirements of this standard may require action on behalf of the Permittee prior to May 20, 2019.

Definitions and Nomenclature [40 CFR 63.7575]

b. For the purpose of this permit condition, the definitions and nomenclature contained in 40 CFR 63.7575 shall apply.

40 CFR Part 63, Subpart A General Provisions [40 CFR 63.7565]

c. The Permittee shall comply with the requirements of 40 CFR Part 63, Subpart A, "General Provisions," according to the applicability of Subpart A to such sources as identified in Table 10 to Subpart 5D.

Compliance Date [40 CFR 63.7510(e), 40 CFR 63.56(b)]

d. The Permittee shall:
   i. Complete the initial tune up and the one-time energy assessment as required in Section 2.1 B.7 r through v no later than May 20, 2019.
   ii. Complete the initial compliance requirements in Section 2.1 B.7.j no later than November 16, 2019 and according to the applicable provisions in 40 CFR 63.7(a)(2).

General Compliance Requirements [40 CFR 63.7505(a), 40 CFR 63.7500]

e. At all times the affected unit(s) is operating, the Permittee shall be in compliance with the emission standards in Section 2.1 B.7.g, except during periods of startup and shutdown. During startup and shutdown, the Permittee shall comply only with items 5 and 6 of Table 3 of Subpart 5D.

f. At all times, then Permittee shall operate and maintain any affected source (as defined in 40 CFR 63.7490), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

Emission Limits [15A NCAC 02Q .0508(f), 40 CFR 63.7500(a)(1), Table 2]

g. The affected unit(s) shall meet the following emission limits:

Pollutant	Emission Limit
Hydrochloric Acid (HCl)	2.2E-02 lb per MMBtu of heat input
Mercury (Hg)	5.7E-06 lb per MMBtu of heat input
Carbon monoxide (CO)	3,500 ppm by volume on a dry basis corrected to 3 percent oxygen, 3 run average or (900 ppm by volume on a dry basis corrected to 3 percent oxygen, 30-day rolling average)

Pollutant	Emission Limit
Filterable Particulate Matter(PM) or Total Suspended Metals (TSM)	4.4E-01 lb per MMBtu of heat input or 4.5E-04 lb per MMBtu of heat input

Testing [15A NCAC 02Q .0508(f)]

h. If emissions testing is required, the testing shall be performed in accordance with General Condition JJ. If the results of this test(s) are above the limits given in Section 2.1 B.7.g above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111.

Notifications [15A NCAC 02Q .0508(f), 40 CFR 63.7545(d), 40 CFR 63.7530]

i. The Permittee shall submit the following notifications:
   i. The Permittee shall submit a Notification of Intent to conduct a performance test at least 60 days before the performance test is scheduled to begin.
   ii. For the initial compliance demonstration for each affected source, the Permittee shall submit the Notification of Compliance Status, including all performance test results and fuel analyses, before the close of business on the 60th day following the completion of all performance test and/or other initial compliance demonstrations for all affected sources at the facility The Notification of Compliance Status report must contain all the information specified in paragraphs (e)(1) through (8) of 40 CFR 63.7545 as applicable.

   [40 CFR 63.9(h)(2)(ii), 63.10(d)(2), 63.7545(e)]

   The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if these notification requirements are not met.

Initial compliance requirements [15A NCAC 02Q .0508(f), 40 CFR 63.7510]

j. The Permittee shall demonstrate compliance with the limits in Section 2.1 B.7.g by conducting initial performance test(s) and fuel analyses, establishing operating limits and conducting continuous monitoring system (CMS) evaluation(s) as necessary according to 40 CFR 63.7510, 63.7525 and 63.7530. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if these requirements are not met.

Subsequent compliance requirements [15A NCAC 02Q .0508(f), 40 CFR 63.7515]

k. The Permittee shall conduct subsequent performance tests and fuel analyses as necessary according to 40 CFR 63.7515.

l. The Permittee shall demonstrate continuous compliance with each emission limit and operating limit that applies according to 40 CFR 63.7540.

m. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if the requirements in Sections 2.1 B.7.k and l are not met.

Monitoring requirements [15A NCAC 2Q .0508(f), 40 CFR 63.7525]

n. The Permittee shall install, operate, and maintain an oxygen analyzer system, as defined in 40 CFR 63.7575, or install, certify, operate and maintain continuous emission monitoring systems for CO and oxygen (or carbon dioxide) according to the procedures 40 CFR 63.7525(a).

o. The Permittee shall meet the requirements for all monitoring systems as applicable according to 40 CFR 63.7525.

p. Under the provisions of NCGS 143.215.108, the Permittee shall burn biomass in the wood fired boiler **(ID No. ES-BW-1)** that has a moisture content greater than 40 percent on an as-fired annual heat input basis as demonstrated by monthly fuel analysis to ensure that the boiler remains classified as a hybrid suspension grate boiler as defined in40 CFR 63.7575. The Permittee shall conduct the following:
   i. The Permittee shall develop a site-specific fuel analysis plan.
   ii. The Permittee shall submit the site-specific fuel analysis plan to the NC DAQ – SSCB for review and approval no later than 60 days prior to May 20, 2019.
   iii. The Permittee shall conduct the fuel analysis in accordance DAQ approved site-specific fuel analysis plan.

q. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if the requirements in Sections 2.1 B.7.n through p are not met.

Work Practice Standards [15A NCAC 02Q .0508(f)]

r. The Permittee shall conduct a tune-up of the source(s) every year as specified below. The Permittee shall conduct the tune-up while burning the type of fuel (or fuels in case of units that routinely burn a mixture) that provided the majority of the heat input to the boiler or process heater over the 12 months prior to the tune-up.
   i. As applicable, inspect the burner, and clean or replace any components of the burner as necessary (the Permittee may perform the burner inspection any time prior to the tune-up or delay the burner inspection until the next scheduled unit shutdown;
   ii. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available;
   iii. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown);
   iv. Optimize total emissions of carbon monoxide. This optimization should be consistent with the manufacturer's specifications, if available, and with any NO_X requirement to which the unit is subject; and
   v. Measure the concentrations in the effluent stream of carbon monoxide in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer.

   [40 CFR 63.7500(a), §63.7540(a)(10)]

s. Each tune-up shall be conducted no more than 13 months after the previous tune-up. [40 CFR 63.7515(d)]

t. If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup. [40 CFR 63.7540(a)(13), 63.7515(g)]

u. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if the requirements in Sections 2.1 B.7.r through t are not met.

Energy Assessment Requirements [15A NCAC 02Q .0508(f)]

v. The Permittee shall have a one-time energy assessment performed by a qualified energy assessor. The energy assessment must address the requirements in 40 CFR Part 63, Subpart 5D, Table 3, with the extent of the evaluation for items (a) to (e) in Table 3 appropriate for the on-site technical hours listed in 40 CFR 63.7575: [40 CFR 63.7500(a)(1), Table 3] The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if these requirements are not met.

Recordkeeping Requirements [15A NCAC 02Q .0508(f), 40 CFR 63.7555]

w. The Permittee shall:
   i. Keep a copy of each notification and report submitted to comply with Subpart 5D, including all documentation supporting any Initial Notification or Notification of Compliance Status, or semiannual compliance report that has been submitted.

   [40 CFR 63.7555(a)(1), 63.10(b)(2)(xiv)]

   ii. Keep records of performance tests, fuel analyses, or other compliance demonstrations and performance evaluations. [40 CFR 63.10(b)(2)(viii)]
   iii. Maintain on-site and submit, if requested by the Administrator, an annual report containing the information in paragraphs (A) through (C) below:
      A. The concentrations of carbon monoxide in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater;
      B. A description of any corrective actions taken as a part of the tune-up; and
      C. the type and amount of fuel used over the 12 months prior to the annual adjustment, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit.

   [40 CFR 63.7540(a)(10)(vi)]

   iv. For each CEMS, COMS, and continuous monitoring system, keep records according to paragraphs (b)(1) through (5) of 40 CFR 63.7555.

v. Keep records required in Table 8 of Subpart 5D including records of all monitoring data and calculated averages for applicable operating limits, such as opacity, pressure drop, pH, and operating load, to show continuous compliance with each emission limit and operating limit that applies.
vi. Keep the applicable records in paragraphs (d)(1) through (13) of 40 CFR 63.7555.

x. The Permittee shall:
i. Maintain records in a form suitable and readily available for expeditious review;
ii. Keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record; and
iii. Keep each record on site for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record. The Permittee can keep the records offsite for the remaining 3 years.

[40 CFR 63.7560, 63.10(b)(1)]

The Permittee shall maintain monthly records biomass fuel moisture content; and

y. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if the requirements in Sections 2.1 B.7.w and x are not met.

Reporting Requirements [15A NCAC 02Q .0508(f), 40 CFR 63.7550]

z. The Permittee shall submit a compliance report to the DAQ on a semiannual basis, postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June.
i. The first compliance report shall be postmarked on or before July 30, 2019 and cover the period from May 20, 2019 through June 30, 2019.
ii. The compliance reports shall also be submitted electronically to the EPA via the procedures in 40 CFR 63.7550(h).

aa. The compliance report shall contain:
i. The information in 40 CFR 63.7550(c) as applicable.
ii. For each deviation from an emission limit or operating limit, the report shall contain the information in 40 CFR 63.7550(d) and (e) as applicable.

bb. Within 60 days after the date of completing each performance test (defined in 40 CFR 63.2) including any associated fuel analyses and/or CEMS performance evaluation (defined in 40 CFR 63.2) as required by Subpart 5D, the Permittee shall submit the results to the DAQ pursuant to 40 CFR 63.10(d)(2) and to the EPA via the procedures in 40 CFR 63.7550(h).

Attachment 3

Revised Permit Condition for CAM

Section 2.1 B.5

5. 15A NCAC 02D. 0614 "Compliance Assurance Monitoring"

a. Pursuant to 40 CFR 64 and 15A NCAC 02D .0614, the Permittee shall comply with the conditions below for the hybrid suspension grate wood-fired boiler **(ID No. ES-BW-1)** with multicyclone **(ID No. CD-3)** and venturi wet scrubber **(ID No. CD-2)**

Emission Limitations/Standards

b. The following table presents the regulated pollutants and the associated emission limitations/standards:

Regulated Pollutant	Limits/Standards	Applicable Regulation
Particulate matter (PM)	**0.41 pounds per million Btu heat input**	15A NCAC 02D .0512

Monitoring Approach [15A NCAC 02Q .0508(f), 40 CFR 64.6]

c. The key elements of the monitoring approach for PM/ PM10 and visible emissions, including parameters to be monitored, parameter ranges and performance criteria are presented in the following table.

Monitoring Elements	Indicator
Measurement Approach [64.6(c)(1)(i), (ii)]	Visible emissions from the venturi scrubber outlet will be monitored daily using a reference method 22-like procedures.
Indicator Range [64.6(c)(2)]	An excursion is defined as the presence of visible emissions. Excursions trigger an inspection and corrective action.
QIP threshold [64.8]	The Permittee shall develop a QIP if the threshold of six excursions in a six-month reporting period is exceeded.
Data Representativeness [64.6(c)(1)(iii), 64.3(b)(1)]	Observations are being made at the emission points (venturi scrubber outlet).
QA/QC Practices and Criteria [64.3(b)(3)]	The observer will be familiar with Method 22 and the follow Method 22-like procedures.
Monitoring frequency [64.3(b)(4)]	One Method 22-like observation shall be performed daily.
Data collection procedure [64.3(b)(4)]	The results of the monitoring action will be recorded, including the date and time.

Recordkeeping Requirements [15A NCAC 02Q .0508(f), 40 CFR 64.9]

d. The Permittee shall maintain records of the following:
   i. Date and time and results of all monitoring activities;
   ii. Information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken; and
   iii. Written QIP required pursuant to 40 CFR 64.8 and any activities undertaken to implement a quality improvement plan

Reporting Requirements [15A NCAC 02Q .0508(f), 40 CFR 64.9]

e. The Permittee shall submit a summary report of all monitoring activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations for the requirements of this permit must be clearly identified. At a minimum, the report shall include the following elements:
   i. Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;

ii. Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable); and
iii. A description of the actions taken to implement a QIP during the reporting period as specified in 40 CFR 64.8. Upon completion of a QIP, the Permittee shall include in the next summary report documentation that the implementation of the plan has been completed and reduced the likelihood of similar levels of excursions or exceedances occurring.

Attachment 4
Permit Review for "Part 1" Permit Application

NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: October 9, 2017

Region: Wilmington Regional Office
County: Columbus
NC Facility ID: 2400125
Inspector's Name: Russell Morgan III
Date of Last Inspection: 05/31/2017
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): West Fraser, Inc. - Armour Lumber Mill

Facility Address:
West Fraser, Inc. - Armour Lumber Mill
361 Federal Road
Riegelwood, NC 28456

SIC: 2421 / Sawmills & Planing Mills General
NAICS: 321113 / Sawmills

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 15A NCAC 02D .0512, .0521 & 2Q .0504
NSPS: N/A
NESHAP: N/A
PSD: N/A
PSD Avoidance: N/A
NC Toxics: N/A
112(r): N/A
Other: Includes Notice of Intent to Construct, tracking No. 2400125.17A

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Michelle Potter Environmental Coordinator (910) 655-4106 361 Federal Road Riegelwood, NC 28456	Russell Schwartz General Manager (910) 655-4106 361 Federal Road Riegelwood, NC 28456	Michelle Potter Environmental Coordinator (910) 655-4106 361 Federal Road Riegelwood, NC 28456

Application Data

Application Number: 2400125.17B
Date Received: 08/01/2017
Application Type: Modification
Application Schedule: TV-Sign-501(c)(2) Part I

Existing Permit Data
Existing Permit Number: 02248/T28
Existing Permit Issue Date: 02/18/2016
Existing Permit Expiration Date: 10/31/2016

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2016	10.42	92.00	379.72	255.91	95.29	30.80	19.92 [Methanol (methyl alcohol)]
2015	9.40	83.02	394.12	226.20	92.23	29.46	20.22 [Methanol (methyl alcohol)]
2014	8.90	78.37	412.49	213.51	77.06	42.66	19.98 [Methanol (methyl alcohol)]
2013	9.80	86.01	389.06	234.50	77.90	42.52	18.93 [Methanol (methyl alcohol)]
2012	9.18	80.76	328.25	220.26	60.15	37.39	15.97 [Methanol (methyl alcohol)]

Review Engineer: Judy Lee

Review Engineer's Signature: **Date:** October 9, 2017

Comments / Recommendations:
Issue: 02248/T29
Permit Issue Date: October 9, 2017
Permit Expiration Date: **This permit shall expire on the earlier of September 30, 2022 or the renewal of Permit No. 02248T27 has been issued or denied.

Attachment 4
Permit Review for "Part 1" Permit Application

1. Purpose of Application

West Fraser, Inc. - Armour Lumber Mill (WF – Armour) located in Columbus County, North Carolina submitted air permit application (2400125.17B) dated June 2017 and it was received by the Division of Air Quality (DAQ) Raleigh Central Office (RCO) on August 1, 2017. An additional information request was sent to the applicant dated September 14, 2017 and the application was not considered complete until October 2, 2017 when the requested information was received by the DAQ. WF – Armour requests the addition of a new hogged planer shavings cyclone and bin to increase the marketability of the wood residual stream.

WF – Armour also requests that the Division process this permit application using the two-step permitting process outlined in 15A NCAC 02Q .0501(c)(1), which will require WF – Armour to submit a Part 2 permit application within twelve (12) months of commencing operation for the new hogged planer shaving bin and cyclone to requests incorporation into their Title V Permit.

In addition, WF - Armour submitted a renewal request received by DAQ-RCO on January 28, 2016 (Application No. 2400125.16A) for Air Quality Permit No. 02248T28, which is currently in house and was received at least nine months prior to the expiration date. Therefore, per 15A NCAC 2Q .0513, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewed permit has been issued or denied.

15A NCAC 02Q .0512 PERMIT SHIELD AND APPLICATION SHIELD

(a) Permit Shield:
…
(5) A permit shield shall not extend to minor permit modifications made under Rule .0515 of this Section.
(b) Application Shield.
(1) Except as provided in Subparagraph (b)(2) of this Rule, if the applicant submits a timely and complete application for permit issuance (including for renewal), the facility's failure to have a permit under this Section shall not be a violation:
(A) unless the delay in final action is due to the failure of the applicant's timely submission of information as required or requested by the Director, or
(B) until the Director takes final action on the permit application.
(2) Subparagraph (b)(1) of this Rule shall cease to apply if, subsequent to the completeness determination made under Rule .0507 of this Section, the applicant fails to submit by the deadline specified in writing by the Director, any additional information identified as being needed to process the application.

15A NCAC 02Q .0513 PERMIT RENEWAL AND EXPIRATION

(a) Permits being renewed …
(b) Permit expiration terminates the facility's right to operate unless a complete renewal application has been submitted at least nine months before the date of permit expiration.
(c) If the permittee or applicant has complied with Rule .0512(b)(1) of this Section, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

2. Facility Description

WF - Armour operates a sawmill (Standard Industrial Classification (SIC) Code – 3211). The primary product manufactured at WF – Armour is southern yellow pine into lumber. Other products formed as a result of this operation include wood chips, sawdust, bark and shavings. The sawmill currently operates two shifts – Monday through Thursday. The kiln and boiler areas typically operate 24 hours per day and

7 days per week to avoid unnecessary start-ups and shut-downs. The Planer Mill operates two shifts – five days per week. Approximately, 200 million board feet (MMBF = Million Board Feet) of dimensional lumber are typically produced each year (MMBFT/yr). The entire mill consists of: the wood-fired boiler (ES-BW-1) and associated control devices; the Saw Mill; the Planer Mill; and the Lumber Drying Kilns.

Pine logs are trucked in, debarked, and cut into appropriate dimensions in the sawmill. The green lumber is dried and planed. Two continuous drying lumber kilns are used to reduce the moisture content in the lumber from approximately 50 to 15 percent. Steam is provided by a wood-fired boiler. The dried lumber is sorted by length, size, and grade and transported by truck or rail for delivery to the customer. The mill is permitted to produce up to 274,830 thousand board feet (MBF = Thousand Board Feet) of dimensional lumber each year (MBFT/yr) while the mill typically produces 180,000 MBFT/yr.

- **Facility name/address/legal name/responsible official check:**

- ✓ **IBEAM** compared with application submittal
- ✓ NC Department of the Secretary of State Corporation search: **https://www.sosnc.gov/** compared with **IBEAM** (See Attachment 1)

3. History/Background/Application Chronology

Please see the attached Comprehensive Application Report for Application Nos. 2400125.17A & 2400125.17B, as well as email correspondence for more details.

July 25, 2017 – WF – Armour submitted a Notice of Intent (NOI) to Construct for installation of a new hogged planer shavings bin and cyclone at the WF – Armour Lumber Mill in Riegelwood, NC.

July 28, 2017 – DAQ RCO approved WF – Armour's NOI submittal per signed blue sheet.

August 1, 2017 – Current application submitted.

August 22, 2017 – Current application transferred from Rahul Thaker to Judy Lee.

September 14, 2017 – Additional Information request sent to WF – Armour.

October 2, 2017 – Final response to additional Information request received from WF – Armour.

4. Permit Modifications/Changes and Emission Source Module (ESM) Discussion

Changes to West Fraser's current permit **(Permit Number 02248T28)** for this significant modification (application number 2400125.17B) are summarized in the table below:

Attachment 4
Permit Review for "Part 1" Permit Application

Page(s)	Section	Description of Change(s)
Cover letter, Entire Permit	Globally, as necessary	Updated permit number, effective dates, signatures, etc.
Attachment	Insignificant Activities List	Added shavings bin (IF-SB-2)
3	Section 1 - Emission Source Table	Removed notation ** about the minor modification procedures (15A NCAC 02Q .0515) for the diesel-fired emergency fire water pump (IES-FP-2) Added (ID No. ES-WW3) Hogged Planer Shavings Cyclone (ID No. CD-D1-1) and ** notation for 15A NCAC 02Q .0501(c)(2) Part I modifications
4 to 5	Section 2 – 1.A.	Added (ID No. ES-WW3) Hogged Planer Shavings Cyclone (ID No. CD-D1-1) and applicable regulations Added 15A NCAC 02Q .0504 requirement for the Permittee having one year from the date of beginning operation of the facility to file an amended application following the procedures of 15A NCAC 02Q .0500.
5	Section 2.1-A.2.c.	Replaced existing language with current shell language for this type of source and included "establish normal" language for new source.
18 through 26	3.0 - General Conditions	Updated with the latest General Conditions (Version 5.1)
27	3.0 - Attachment	Updated the list of acronyms

✓ TVEE was updated accordingly (see pink sheet for approval).

5. New Equipment/Change in Emissions and Regulatory Review

Proposed Equipment Changes
Per application submittal for this permit modification, the following changes were requested (see Form A2 and Attachments for more details):

Equipment to be ADDED –

Emission Source ID NO.	Emission Source Description	Control Device ID NO.	Control Device Description
ES-WW3	Wood residuals hogged planer	CD-D1-1	Cyclone (Shavings)
IF-SB-2	Shavings bin	N/A	N/A

Equipment to be MODIFIED – n/a

Equipment to be REMOVED — n/a

Changes in Emissions
Total Facility-wide emissions based on Emission Inventory (please see table at beginning of document).

In addition to requirements provided in Section 3 – General Conditions, this source is currently subject to the following regulations:

15A NCAC 02D .0504, "Particulates from Wood Burning Indirect Heat Exchangers"
15A NCAC 02D .0512, "Particulates from Miscellaneous Wood Products Finishing Plants"

15A NCAC 02D .0515, "Particulates from Miscellaneous Industrial Processes"
15A NCAC 02D .0516, "Sulfur Dioxide Emissions from Combustion Sources"
15A NCAC 02D .0521, "Control Of Visible Emissions"
15A NCAC 02D .0530, "PREVENTION OF SIGNIFICANT DETERIORATION" (VOC BACT limits & 02D .0530(u) NSR Pollutant tracking)
15A NCAC 02D .0535, "Excess Emissions Reporting and Malfunctions"
15A NCAC 02D .0614, "Compliance Assurance Monitoring"
15A NCAC 02D .1109, "Case-by-Case Maximum Achievable Control Technology (MACT)"
15A NCAC 02D .1111, "Maximum Achievable Control Technology (40 CFR 63, Subparts DDDD & ZZZZ)"
15A NCAC 02D .1806, "Control and Prohibition of Odorous Emissions"

The following regulations have been reviewed for applicability and added/updated and/or modified as part of this minor modification:

15A NCAC 02D .0512, Particulates from Miscellaneous Wood Products Finishing Plants – Particulate matter shall not be discharged to the atmosphere from the working, sanding, or finishing of wood to be discharged from any stack, vent, or building into the atmosphere without providing, as a minimum for its collection, adequate duct work and properly designed collectors, or such other devices as approved by the commission, and in no case shall the ambient air quality standards be exceeded beyond the property line. Collection efficiency shall be determined on the basis of weight without the provision of adequate duct work and properly designed collectors. Ambient air quality standards shall not be exceeded beyond the property line.

- ✓ West Fraser will comply with this regulation by providing and maintaining adequate ductwork and collectors on the proposed wood residuals hogged planer operation (ID No. ES-WW3) and associated cyclone (CD-D1-1) that are similar to other operations at the facility.

Based on the last inspection, this facility was noted to be in compliance with this regulation for similar equipment; thus, compliance is expected.

15A NCAC 02D .0521 "Control Of Visible Emissions" – The intent of this rule is to prevent, abate and control emissions generated from fuel burning operations and industrial processes where an emission is expected to occur, except during startups made according to procedures approved under 2D .0535. This rule is applicable to all fuel burning sources and other processes that may have a visible emission (VE). For sources that will be manufactured and operated after July 1, 1971, visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 87 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period. [02D .0521(d)]

- ✓ The proposed wood residuals hogged planer operation (ID No. ES-WW3) and associated cyclone (CD-D1-1) are similar to other operations at the facility. Compliance with this regulation will be indicated by establishing normal, which should be no VE.

During the last inspection, no visible emissions were observed from similar operations. Therefore, the facility is expected to be in compliance with 02D .0521.

15A NCAC 02D .0530 "PREVENTION OF SIGNIFICANT DETERIORATION" (VOC) and
15A NCAC 02Q .0317 "AVOIDANCE CONDITIONS" for 15A NCAC 2D .0530 (VOC)

WF – Armour is an existing major source regulated under the Prevention of Significant Deterioration (PSD) program. West Fraser has potential emissions of volatile organic compounds (VOC) exceeding 250 tons per year (tpy). WF – Armour currently has Best Available Control Technology (BACT) limits in their permit for two continuous steam heated dual path lumber drying kilns (ES-CDPK1 and ES-CDPK2), as well as one steam heated lumber drying kiln (ES-K1-4). Therefore, WF – Armour must evaluate the potential emissions from any new construction or modification and compare emissions to the appropriate PSD Significant Emission Rate (SER) thresholds to determine if a project is subject to PSD review.

- ✓ The pollutant of concern from the proposed project is particulate matter (PM). The proposed modification will result in increased PM, PM10, and PM2.5 emissions; thus, PSD applicability must be evaluated.

Per the application submittal, Section 4.0 - Project Description, the new cyclone and associated bin will receive hogged material from the trimming operations and store it to retain fuel quality prior to being transported off site for sale. When handled properly, this residual material is highly marketable as a fuel source. This wood residual material is currently sent from the hogger to the fuel chain cyclone where it is used as a supplemental fuel for the wood-fired boiler. The proposed project will allow the material to be transported to the new bin for storage until it can be sold, or alternately, to the existing fuel chain cyclone for use as a supplemental fuel source onsite. The proposed cyclone is anticipated to be similar in size and operation to the existing fuel chain cyclone and therefore the net impact to emissions from the facility is assumed to be negligible.

Additional information provided via email on September 25, 2017 for baseline emissions and emission factors (EF) are provided below:

Emission Source: **Fuel Chain Supply Cyclone**
Source ID Number: **ES-WW2**
Control Device ID Number: **CD-C1-1**

Actual Process Throughput:

	2016	2015	Baseline	
Total Operation =	3,651	3,549	3,600	hours/year
Fuel Chain Cyclone Operation[3] =	365	355	360	hours/year

Baseline Emissions Summary:

Compound	Emission Factor		Reference	Emissions	
PM	2	lb/hr	1	0.36	tpy
PM_{10}	1.29	lb/hr	2	0.23	tpy
$PM_{2.5}$	0.70	lb/hr	2	0.13	tpy

References:

1. Factor taken from 4th Edition of AP-42, Section 10.4, Table 10.4.1
2. Particle size estimations of 64.5% PM_{10} and 34.95% $PM_{2.5}$ are taken from test data of a similar source at the West Fraser Henderson Lumber Mill.
3. Material that can be processed by the cyclone is roughly 10% of what can be processed through the entire operation; therefore, potential operating hours on that cyclone are roughly 10% of the potential operating hours for the entire operation.

Project calculations were performed for the addition of the new source. To calculate potential emissions, the calculations assume the source will operate 8,760 hours per year.

Emission Source: **Hogged Planer Shavings Bin Cyclone**
Source ID Number: **ES-WW3**
Control Device ID Number: **CD-D1-1**

Potential Process Throughput:

Total Operation = 8,760 hours/year
Hogged Planer Shavings Cyclone Operation[3] = 8,760 hours/year

Hogged Planer Shavings Cyclone Emissions Summary:

Compound	Emission Factor		Reference	Potential Emissions	
PM	2	lb/hr	1	8.8	tpy
PM_{10}	1.29	lb/hr	2	5.7	tpy
$PM_{2.5}$	0.70	lb/hr	2	3.1	tpy

References:

1. Factor taken from 4th Edition of AP-42, Section 10.4, Table 10.4.1
2. Particle size estimations of 64.5% PM_{10} and 34.95% $PM_{2.5}$ are taken from test data of a similar source at the West Fraser Henderson Lumber Mill.
3. Material that can be processed by the cyclone is roughly 10% of what can be processed through the entire operation; therefore, potential operating hours on that cyclone are roughly 10% of the potential operating hours for the entire operation. For the purpose of these calculations, the potential operation of the new cyclone has been set to 8,760 to be grossly conservative.

In reality, the residuals generated from the trimming of the kiln dried lumber account for approximately 10% of the total mill residuals.[5] This is equivalent to a maximum operating time for the new source of only 870 hours per year if all of the residuals are directed to the new bin. This approach provides a gross overestimation of potential emissions to be conservative. Due to the conservative nature of this calculation, the resulting emissions are greater than the levels that would allow the new cyclone to be considered insignificant. Baseline emissions are based on the most recent two years of emissions data for the fuel chain cyclone. Emissions were verified by this review engineer through the emissions inventory database, as well as hours of operation. This resulted in WF – Armour submitting a revised Table 4-1: PSD Applicability for the Proposed Project via email on September 25, 2017 inserted below:

[5] Per application submittal, material that can be processed by the cyclone is roughly 10% of what can be processed through the entire operation; therefore, potential operating hours on that cyclone are roughly 10% of the potential operating hours for the entire operation. For the purpose of theses calculations, the potential operation of the new cyclone has been set to 8,760 to be grossly conservative.

Source	Emissions, (TPY)		
	PM	PM_{10}	$PM_{2.5}$
Baseline			
Fuel Chain Supply Cyclone	0.4	0.2	0.1
Potential			
Hogged Planer Shavings Bin Cyclone	8.8	5.7	3.1
Project Emissions Impact			
Baseline-to-Potential	8.4	5.4	2.9
PSD SER	25	15	10
Netting Required	No	No	No

Note: the material that is currently processed through the fuel chain supply cyclone will be able to alternately go to the new hogged planer shavings cyclone.

✓ Emissions increases are below SER; thus, PSD permitting is not triggered.

WF – Armour's consultant, Mr. Brad Justus provided the remaining additional information via email on October 2, 2017. Please see the attached, completed C4 Form for the proposed cyclone information.

Per email dated September 20, 2017 a Professional Engineer's seal is not required (please see Section 9 below for more details).

The shavings collection bin (ID No. IF-SB-2) is not equipped with any vents and should reasonably be assumed to have negligible emissions.

Although supporting documentation was requested to show that the shavings bin was below the insignificant threshold values per 15A NCAC 02Q .0503 (8) "Insignificant activities because of size or production rate" means any activity whose emissions would not violate any applicable emissions standard and whose potential emission of particulate, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide before air pollution control devices, i.e., potential uncontrolled emissions, are each no more than five tons per year and whose potential emissions of hazardous air pollutants before air pollution control devices, are each below 1000 pounds per year; including calculations, the only information provided by Mr. Justus on behalf of WF – Armour via email on October 2, 2017.

"As we had previously discussed, the shavings bin is completely enclosed and is not anticipated to have any emissions associated with it. We have listed it as an insignificant activity as a precautionary measure but the potential emissions are negligible and do not exceed the threshold for an insignificant activity. There is really no way to calculate emissions under these circumstances."

✓ Thus, the shavings bin (ID No. IF-SB-2) will be added to the insignificant activities list; however, if the emissions exceed the insignificant threshold limits at any time in the future, the facility will be in violation of failure to permit this source.

15A NCAC 02Q .0504: OPTION FOR OBTAINING CONSTRUCTION AND OPERATION PERMIT
The following Title V shell language was added for this modification because it was a significant modification processed under the two step permitting process outlined in 15A NCAC 02Q .0501(c)(1), which requires submittal of a Part II application within twelve months of beginning operation of the sources requested under Part I of the significant application process.

Permitting [15A NCAC 02Q .0504(d)]

a. For completion of the two-step significant modification process pursuant to 15A NCAC 02Q .0501(c)(2) or (d)(2), the Permittee shall file an amended application following the procedures of

Section 15A NCAC 02Q .0500 within one year from the date of beginning operation of this/these source(s).

Reporting [15A NCAC 02Q .0508(f)]

b. The Permittee shall notify the Regional Office in writing of the date of beginning operation of this/these source(s), postmarked no later than 30 days after such date.

6. NSPS, NESHAPS, PSD, Attainment Status, 112(r), and CAM

NSPS

The proposed new wood residual hogged planer operations (ID No. ES-WW3) **DO NOT** trigger New Source Performance Standards (NSPS).

This facility is currently subject to the following NSPS standards:

✓ NSPS IIII applies to the diesel-fired emergency fire water pump (IES-FP-2).

NESHAP/MACT

National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations or 15A NCAC 2D .1111 "Maximum Achievable Control Technology" **DOES NOT** apply to this significant modification.

This facility is a major source of HAPs and subject to the following MACT standards:

✓ MACT DDDD applies to the two continuous steam-heated dual path kilns (ID No. ES-CDPK1 and ES-CDPK2) and one steam heated, low temperature lumber drying kiln (ID No. ES-K1-4).
✓ MACT ZZZZ applies to the diesel-fired emergency fire water pump (ID No. ES-FP-1) and (ID No. ES-EG-1) diesel-fired emergency generator.
✓ 02D .1109 Case-By-Case MACT applies to the wood-fired fire tube boiler (ID No. ES-BW-1).

PSD/NAAQS

The facility is a major source under the Federal Prevention of Significant Deterioration (PSD) program. This facility currently has three lumber kilns subject to BACT limits for volatile organic compounds (VOCs). This modification was evaluated for PSD applicability. There are no pollutants above the SER threshold associated with this modification; therefore, a PSD review is not triggered at this time (See Section 5 above).

Attainment Status

Columbus County is in attainment for all applicable pollutants.

VOC emissions

Columbus County is currently classified as "attainment" for Particulate and Ozone based on the US EPA's Green Book. The EPA Green Book provides detailed information about area National Ambient Air Quality Standards (NAAQS) designations, classifications and nonattainment status. Information is current as of the Green Book posted date and is available in reports, maps and data downloads. https://www3.epa.gov/airquality/greenbook/hbtc.html

Columbus County is designated as "Attainment" for both North Carolina — 8 hour and 1 hour Ozone Standards; thus, no permit change is necessary.

PM emissions – Based on NC DAQ's Planning and Attainment for $PM_{2.5}$ Nonattainment Areas, the only counties designated as nonattainment were Catawba, Davidson and Guilford.

According to the Green Book referenced above under VOC emissions, this designation has not changed; hence, Columbus County is classified as "Attainment" for North Carolina—$PM_{2.5}$ (Annual NAAQS). In addition, the entire state is designated as "Unclassifiable/Attainment" for North Carolina—$PM_{2.5}$ [24-hour NAAQS] and for North Carolina—TSP the entire State is designated as "Better than national standards;" thus, no permit change is necessary.

In addition, per Memorandum dated December 18, 2014 to Governor Patrick McCrory from Gina McCarthy, USEPA, all of North Carolina is designated as "unclassifiable/attainment" for fine particle pollution levels:

> I appreciate the information you and your staff have shared with the EPA throughout this process to assess fine particle pollution levels in communities across your state and the impact of emission sources that could be contributing to unhealthy air. After considering your recommendations, reviewing the most recent certified fine particle air quality data for your state and evaluating factors to assess contribution to nearby levels of fine particle pollution, I have determined that no area within North Carolina violates the 2012 standard or contributes to a nearby violation of the standard. As a result, the EPA is designating all of North Carolina "unclassifiable/attainment."

Increment
The PSD minor source base line date for PSD increment tracking in Columbus County was triggered on May 30, 1980 for particulate matter (PM_{10}) and sulfur dioxide (SO_2); then on January 22, 2001 for nitrogen oxide (NOx) emissions.

PSD increment tracking for PSD Class II purposes is required as part of this significant modification due to an actual increase in $PM/PM_{10}/PM_{2.5}$ emissions of 2.00/1.29/0.70 pounds per hour (lbs/hr) (Please refer to Section 5 above under PSD for more information or Form B of the application submittal).

112(r)
Per Form A3 – 112(r) Applicability Information, this facility is not subject to 40 CFR Part 68 "Prevention of Accidental Releases" because they do not store any other materials at levels requiring Risk Management Plan (RMP), Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the RMP thresholds in the Rule.

CAM
A Compliance Assurance Monitoring (CAM) (40 CFR Part 64) plan is not required for this significant modification. The proposed new woods residual hogged planer operations (ID No. ES-WW3) will use a cyclone to comply with the applicable regulations; however, the control device does not see greater than 100 tons of particulate. Thus, CAM does not apply to this significant modification.

- ✓ The existing wood-fired boiler (ID No. ES-BW-1) is subject to CAM.

7. Facility Wide Air Toxics

This proposed modification does not change the PTE or cause an increase in actual toxics emissions because the only pollutant associated with the proposed new woods residual hogged planer operations (ID No. ES-WW3) is particulate matter (PM).

This facility previously completed a toxics evaluation and demonstrated compliance with the AALs by modeling all toxic air pollutants (TAPs) associated the two CDK's, the wood-fired boiler and two emergency internal combustion engines.

During a revision of permit No. 02248T25, WF - Armour's Plant Manager and Responsible Official, Mr. Peter Provencher, requested that NC toxic air pollutant (TAP) requirements be removed from the permit for all MACT affected sources as allowed by NC House Bill 952. The existing permit contained 2D .1100 TAP limits for the above mentioned sources. Each affected source is subject to 40 CFR Part 63; therefore, exempt from state air toxic rules, provided facility wide toxic emissions pose no unacceptable risk to human health.

At the time of the previous permit revision, projected actual emissions of eleven TAPs based on a maximum annual facility wide lumber drying rate of 274,830 MBF were expected to exceed the emission rate for which a permit is required, TPERs. Projected actual emissions were based on the maximum allowable production rate for the two CDKs and the expected steam demands provided by the wood-fired boiler. For the compliance demonstration, WF – Armour modeled each TAP using AERMOD and five years (1988 to 1992) of meteorological data from Wilmington, North Carolina (surface) and Columbia, South Carolina (upper air), as downloaded from the NC DAQ website.

Given that the emissions of all TAPs were at a maximum of 32.2% of the AAL and the reinstatement of Kiln #4 was not expected to increase TAP emissions above the modeled rates, there will be no unacceptable health risk with the removal of State-Only Air Toxic Conditions. Therefore, the 15A NCAC 2D .1100 and 2Q .0705 requirements were removed from the permit upon issuance of permit No. 02248T26 on December 18, 2013.

8. Facility Compliance Status [taken from latest inspection report by Mr. Russell Morgan of the Wilmington Regional Office (WiRO) dated December 15, 2016]

Five Year Compliance History: A five year records review was conducted in order to see if there were any recent violations or compliance issues associated with this Title V air permit. The only incident identified within that time frame was an NOD that was issued on 7/30/15 for failing to consistently control the dP of the boiler scrubber at or above 12.6" of W.C. An NOD was selected as the appropriate compliance enforcement tool since the observed deviations did not likely produce a particulate emission standard exceedance. This is because the vast majority of excursions (excluding data collected during startup and shutdown) were still well above the manufacturer's differential pressure design of 11" W.C. at a particulate emissions guarantee of 0.07 lb/MMBtu and recognizes the fact that higher dP's will generally result in improved particulate collection efficiencies. WF's particulate emission limit under 15A NCAC 2D .0504 is 0.41 lb/MMBtu. Particulate emission as measured in the most recent performance test was 0.10 lb/MMBtu (Nov., 2014). No other compliance issues were noted in this records review.

Conclusions, Comments, and Recommendations: I recommend that this facility be accepted as being compliant with NCDAQ regulations and permit conditions inspected during this partial compliance inspection.

9. Conclusions, Comments, and Recommendations

PE Seal

Pursuant to 15A NCAC 2Q .0112 "Application requiring a Professional Engineering Seal," a professional engineer's seal (PE Seal) is required to seal technical portions of air permit applications for new sources and modifications of existing sources as defined in Rule .0103 of this Section that involve:

(1) design;
(2) determination of applicability and appropriateness;
(3) or determination and interpretation of performance; of air pollution capture and control systems.

The requirements of 15A NCAC 2Q .0112 do not apply to the following:

(1) any source with non-optional air pollution control equipment that constitutes an integral part of the process equipment as originally designed and manufactured by the equipment supplier;

(2) sources that are permitted under Rule .0310 or .0509 of this Subchapter;

(3) paint spray booths without air pollution capture and control systems for volatile organic compound emissions;

(4) particulate emission sources with air flow rates of less than or equal to 10,000 actual cubic feet per minute;

(5) nonmetallic mineral processing plants with wet suppression control systems for particulate emissions; or

(6) permit renewal if no modifications are included in the permit renewal application.

Per email correspondence received from Mr. Brad Justus of ERM on behalf of WF – Armour on September 20, 2017, the proposed cyclone on the wood residues bin is installed to collect the valuable material at the end of pneumatic conveying and drop it into a collection bin. It is an integral part of the conveying system necessary to collect the valuable commodity and thus would be excluded from the requirement of the PE seal.

- ✓ A professional engineer's seal (PE Seal) was NOT required for this modification because the proposed planer cyclone is non-optional air pollution control equipment that constitutes an integral part of the process equipment as originally designed and manufactured by the supplier. Thus, per 15A NCAC 02Q .0112(C)(1) a PE Seal is not required.

Zoning

A Zoning Consistency Determination per 2Q .0304(b) was required. A zoning determination request that satisfied the requirements of North Carolina General Statue (NCGS) 143-215.108(f) was received by RCO as part of the application submittal received on August 1, 2017.

15A NCAC 02Q .0113 NOTIFICATION IN AREAS WITHOUT ZONING

(a) State and local governments are exempt from this Rule.
(b) Before a person submits a permit application for a new or expanded facility in an area without zoning, he shall provide public notification as setout in this Rule.
(c) A person covered under this Rule shall publish a legal notice as specified in Paragraph (d) of this Rule and shall post a sign as specified in Paragraph (f) of this Rule.

Per permit application, Section 1.0 – Executive Summary, 1.1 – Background, Appendix C includes the affidavit and proof of publication of legal notice in the local newspaper required by 15A NCAC 02Q .0113 – Notification in Areas without Zoning. Appendix C also includes a photograph of the sign posted at the facility.

Attachment 4
Permit Review for "Part 1" Permit Application

- ✓ Public Notice **nor** EPA review is required as part of this significant modification. This significant modification will be processed in two steps. This application is considered step I. During processing of step II the application will go through a public notice and EPA review period.

RCO Stationary Source Compliance Branch (SSCB) was presented with a DRAFT permit and review on October 2, 2017 prior to issuance and had XXXX comments per email received on XXXX, 2017 from Mr. Samir Parekh.

WiRO was presented with a DRAFT permit and review on October 2, 2017 prior to issuance and recommends issuance of the revised permit per email from Mr. Russell Morgan III, WiRO dated October 5, 2017.

A draft permit was sent to WF - Armour on October 2, 2017 via email and comments received via email on October 5, 2017.

RCO concurs with WiRO's recommendation to issue revised Air Permit No. 02248T29.

Attachment 4
Permit Review for "Part 1" Permit Application

Complete Form C4 – Control Device ID No: CD-D1-1 received via email on October 2, 2017

FORM C4

CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — C4

CONTROL DEVICE ID NO: CD-D1-1	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-WW3
EMISSION POINT (STACK) ID NO(S): EP-WW3	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
OPERATING SCENARIO:	
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? ☐ YES ☑ NO

DESCRIBE CONTROL SYSTEM : Simple cyclone

POLLUTANT(S) COLLECTED:	PM_{10}	$PM_{2.5}$		
BEFORE CONTROL EMISSION RATE (LB/HR):	4.68	0.70		
CAPTURE EFFICIENCY:	99.9 %	99.9 %	%	%
CONTROL DEVICE EFFICIENCY:	72.5 %	0 %	%	%
CORRESPONDING OVERALL EFFICIENCY:	72 %	0 %	%	%
EFFICIENCY DETERMINATION CODE:	4 (estimated)	4 (estimated)		
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	1.29	0.70		

PRESSURE DROP (IN. H_2O): ____ MIN ____ MAX

INLET TEMPERATURE (°F): _ambient___ MIN __ambeint___ MAX	OUTLET TEMPERATURE (°F): _ambient___ M _ambient___ MAX
INLET AIR FLOW RATE (ACFM): ~14,000	BULK PARTICLE DENSITY (LB/FT³):0.00014
POLLUTANT LOADING RATE (GR/FT³): 1.0 of PM	

SETTLING CHAMBER	CYCLONE			MULTICYCLONE
LENGTH (INCHES):	INLET VELOCITY (FT/SEC):		☑ CIRCULAR ☐ RECTANGLE	NO. TUBES: NA
WIDTH (INCHES):	*DIMENSIONS (INCHES) See Instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES: NA
HEIGHT (INCHES):	H: 50	Dd: 16	LIQUID USED: NA	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	W: 19.25	Lb: 56	FLOW RATE (GPM): NA	☐ YES ☐ NO
NO. TRAYS:	De:	Lc: 147	MAKE UP RATE (GPM): NA	LOUVERS?
NO. BAFFLES:	D: 112	S:		☐ YES ☐ NO
	TYPE OF CYCLONE: ☐ CONVENTIONAL		☑ HIGH EFFICIENCY	☐ OTHER

DESCRIBE MAINTENANCE PROCEDURES: NA

DESCRIBE INCOMING AIR STREAM: the incoming air stream contains pneumatically transferred hogged planer shavings and ambient air. The cyclone is used to collectet the material into the enclosed shavings bin until shipped offsite to customers.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1		
1-10		
10-25		
25-50		
50-100		
>100		
		TOTAL = 100

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:

ON A SEPARATE PAGE, ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

Attachment 4
Permit Review for "Part 1" Permit Application

North Carolina Department of the Secretary of State Corporation search as of September 6, 2017:
https://www.sosnc.gov/Search/filings/8170029

BUSINESS CORPORATION ANNUAL REPORT

NAME OF BUSINESS CORPORATION: West Fraser, Inc.

SECRETARY OF STATE ID NUMBER: 0903730 STATE OF FORMATION: DE

REPORT FOR THE FISCAL YEAR END: 12/31/2016

Filing Office Use Only
E-Filed Annual Report
0903730
CA201706800958
3/9/2017 11:55
☐ Changes

SECTION A: REGISTERED AGENT'S INFORMATION

1. NAME OF REGISTERED AGENT: CT Corporation System

2. SIGNATURE OF THE NEW REGISTERED AGENT: _____
SIGNATURE CONSTITUTES CONSENT TO THE APPOINTMENT

3. REGISTERED OFFICE STREET ADDRESS **& COUNTY**
160 Mine Lake Ct Ste 200
Raleigh, NC 27615-6417 Wake County

4. REGISTERED OFFICE MAILING ADDRESS
160 Mine Lake Ct Ste 200
Raleigh, NC 27615-6417

SECTION B: PRINCIPAL OFFICE INFORMATION

1. DESCRIPTION OF NATURE OF BUSINESS: Lumber Manufacturing

2. PRINCIPAL OFFICE PHONE NUMBER: 9016204200

3. PRINCIPAL OFFICE EMAIL: Privacy Redaction

4. PRINCIPAL OFFICE STREET ADDRESS **& COUNTY**
1900 Exeter Rd., Ste. 105
Germantown, TN 38138-2954

5. PRINCIPAL OFFICE MAILING ADDRESS
1900 Exeter Rd., Ste. 105
Germantown, TN 38138-2954

SECTION C: OFFICERS (Enter additional officers in Section E.)

NAME: Sarah Coker	NAME: Sarah Coker	NAME: Henry H. Ketcham
TITLE: Treasurer	TITLE: Secretary	TITLE: President
ADDRESS:	ADDRESS:	ADDRESS:
1900 Exeter Rd., Ste. 105	1900 Exeter Rd., Ste. 105	1900 Exeter Rd., Ste. 105
Germantown, TN 38138	Germantown, TN 38138	Germantown, TN 38138

SECTION D: CERTIFICATION OF ANNUAL REPORT. Section D must be completed in its entirety by a person/business entity.

Sarah Coker — SIGNATURE
3/9/2017 — DATE
Form must be signed by an officer listed under Section C of this form.

Sarah Coker — Print or Type Name of Officer
Treasurer — Print or Type Title of Officer

This Annual Report has been filed electronically.

MAIL TO: Secretary of State, Corporations Division, Post Office Box 29525, Raleigh, NC 27626-0525